THE

Lumleian Lectures

ON

THE DIGESTIVE FERMENTS, AND THE PREPARATION AND USE OF ARTIFICIALLY DIGESTED FOOD.

Delivered before the Royal College of Physicians,

BY WM. ROBERTS, M.D., F.R.C.P., F.R.S.,

PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY; PROFESSOR OF CLINICAL MEDICINE TO THE OWENS COLLEGE.

LECTURE I.—PART II.

DIASTATIC FERMENTS—DIGESTION OF STARCH.

THE importance of starch as an article of human food has, perhaps, scarcely been duly recognised. If we regard the enormous proportion in which the seeds of cereals and leguminous plants and the tuber of the potato enter into our dietary, and the immense percentage of starch in these articles, it is probably not too much to say that fully two-thirds of the food of mankind consists of starch.

In the raw state, starch is to man an almost indigestible substance; but when previously subjected to the operation of cooking it is digested with great facility.

Diastase has only a feeble action on the unbroken starch granule, even at the temperature of the body. In the lower animals, and in germinating seeds, the starch granule is probably attacked in the first instance by some other solvent, which penetrates its outer membranes, and thus enables the diastase to reach and act on the starchy matter contained within. By the aid of heat and moisture in the process of cooking, the starch granule is much more effectively broken up. Its contents swell out enormously by imbibition of water, and the whole is converted, more or less completely, into a paste, or jelly, or mucilaginous gruel. It is in this gelatinous form exclusively, or almost exclusively, that starch is presented for digestion to man.

The digestion of starch is accomplished by the saliva and pancreatic juice, both of which are rich in diastase. Diastase also exists abundantly in the liver, and in smaller quantities in the intestinal juice, in the blood, the urine, and apparently in all the interstitial juices. Diastase from all these diverse sources appears to act substantially in the same manner on starch, changing it by a progressive hydrolysis into sugar and dextrine.

If the action of a fluid containing diastase—say saliva or extract of pancreas—on starch paste be watched, the first effect observed is the liquefaction of the paste and the production of a diffluent solution. This change is effected with great celerity—in two or three minutes the stiff paste becomes a watery liquid. This is evidently a distinct act—and antecedent to the saccharifying process which follows. By operating with small proportions of diastase and large proportions of pure starch paste it is possible to hit on a moment when liquefaction is complete and saccharification is not yet begun. At this moment the solution yields a pure starch reaction, and no reaction of dextrine nor of sugar. The process of saccharification follows immediately on the heels of liquefaction; and in ordinary manipulations the one process runs into the other.

The speed of the action depends primarily on the proportion of the diastase. By adjusting the proportions of diastase and starch in such degrees that saccharification will be completed in about a couple of hours, the successive steps of the process can be leisurely followed by applying from time to time the appropriate tests.

If you test as soon as liquefaction is complete you get a pure blue with iodine and a slight reaction of sugar with Fehling's solution. In a few minutes the sugar reaction becomes more decided; and, although you still get a pure blue with iodine in the ordinary way of testing, you will get, by greatly diluting the blue solution and then adding more iodine, a deep violet tint—showing the presence of erythro-dextrine mixed with starch. The next step is the total disappearance of the blue reaction with iodine, and the substitution for it of an intense reddish-brown colouration of erythro-dextrine. By and by the reddish-brown colour is replaced by a yellowish-brown—indicating the preponderating presence of a different kind of erythro-dextrine. Meanwhile the sugar reaction goes on increasing. The next step is the entire disappearance of any kind of colouration with iodine. But the action is still very far from complete—the proportion of sugar goes on increasing for a considerable time after iodine has ceased to tint the solution. At length however matters come to a standstill, and the proportion of sugar ceases to increase.

The explanation of this series of reactions is impossible on the old view of the constitution of starch. Until recently it was supposed that the starch molecule was represented by the comparatively simple formula $C_{12}H_{20}O_{10}$, and that under the influence of diastase this molecule was resolved by hydration into two molecules, one of dextrine and one of grape-sugar.

The researches of Musculus and O'Sullivan[1] have shown that this is not a correct account of the transformation. In the first place it was found that the sugar produced was not grape-sugar (dextrose), but another kind of sugar called *maltose*. It was also found that the dextrines first produced, and which were coloured red or brown by iodine, were progressively changed, with simultaneous production of sugar, into a series of dextrines of a lower type which did not yield any colouration with iodine. To these latter kinds of dextrine the term achroo-dextrines has been applied.

As maltose is now ascertained to be the kind of sugar which is mainly produced in the digestion of starch by diastase, this body assumes a new and considerable importance in physiological chemistry, and it will not be out of place here to give some description of its properties. Maltose is a fermentescible, crystalline sugar of the saccharose (cane-sugar) class, having very little sweetening power, and possessing one atom less water than grape-sugar. Its formula is $C_{12}H_{22}O_{11}$. It possesses more rotatory power on polarised light than grape-sugar, but has considerably less power of reducing cupric oxide. The rotatory power of maltose is +150, that of grape-sugar +58. The reducing power of maltose is 61 compared to that of grape-sugar as 100. Maltose can be hydrolysed into grape-sugar by prolonged boiling with dilute acids. Malt-diastase does not possess this power, but we shall presently see that the diastatic ferments of the small intestine are able slowly to effect the same change.

The researches of Musculus and O'Sullivan have rendered it necessary to assume that the molecule of soluble or liquefied starch is a composite molecule, containing several members of the group $C_{12}H_{20}O_{10}$—which is to be regarded as the constituent radical of the composite starch molecule. The starch molecule must in the future be represented by the formula $n(C_{12}H_{20}O_{10})$—the value of n not being yet definitely agreed upon.

Two able chemists of Burton-on-Trent, H. T. Brown and J. Heron, have extended these researches, and fully confirmed the main conclusions of Musculus and O'Sullivan. In a recent publication (*Journ. Chem. Soc.*, Sept. 1879), they have for the first time presented a fairly complete scheme of the succession of changes undergone by starch under the action of diastase. These chemists assume that the molecule of soluble starch consists of ten members of the group $C_{12}H_{20}O_{10}$, and that its formula should be written $10(C_{12}H_{20}O_{10})$. This view greatly facilitates the comprehension of the progresive hydrolysis of starch by diastase.

We have seen that starch in the condition of paste or jelly is distinguished sharply by its physical properties from liquefied or soluble starch. There must therefore in all probability be some difference of molecular aggregation between starch in these two states—and it will not be a very bold assumption to suppose that starch in the gelatinous state consists of still more complex molecules than soluble starch—and that several molecules of soluble starch are grouped together to form the molecule of starch in the gelatinous state.

On the ground of these assumptions we may represent the successive steps of the digestion of gelatinous starch by the following series of equations.

The molecule of gelatinous starch $= n\,(C_{12}H_{20}O_{10})$ is first resolved into n molecules of soluble starch. The molecule

[1] O'Sullivan's papers are published in the Journal of the Chemical Society, from 1872 to 1876. A full account of these researches is given in a paper in the same journal for September, 1879, by T. H. Brown and J. Heron.

of soluble starch is then resolved by progressive deduplication and hydration into dextrine and maltose by the following succession of steps :—

One molecule of soluble starch = $10(C_{12}H_{20}O_{10}) + 8(H_2O)$ =

1. Erythro-dextrine α $9(C_{12}H_{20}O_{10}) + (C_{12}H_{22}O_{11})$ maltose.
2. Erythro-dextrine β $8(C_{12}H_{20}O_{10}) + 2(C_{12}H_{22}O_{11})$,,
3. Achroo-dextrine α $7(C_{12}H_{20}O_{10}) + 3(C_{12}H_{22}O_{11})$,,
4. Achroo-dextrine β $6(C_{12}H_{20}O_{10}) + 4(C_{12}H_{22}O_{11})$,,
5. Achroo-dextrine γ $5(C_{12}H_{20}O_{10}) + 5(C_{12}H_{22}O_{11})$,,
6. Achroo-dextrine δ $4(C_{12}H_{20}O_{10}) + 6(C_{12}H_{22}O_{11})$,,
7. Achroo-dextrine ϵ $3(C_{12}H_{20}O_{10}) + 7(C_{12}H_{22}O_{11})$,,
8. Achroo-dextrine θ $2(C_{12}H_{20}O_{10}) + 8(C_{12}H_{22}O_{11})$,,

The final result of the transformation is represented by the equation $10(C_{12}H_{20}O_{10}) + 8H_2O = 8(C_{12}H_{22}O_{11}) + 2(C_{12}H_{20}O_{10})$.
Soluble Starch. Water. Maltose. Achroo-dextrine.

We must conceive that the energy of the ferment is exercised in gradually pulling asunder the component groups or radicals of the unstable molecule of soluble starch, detaching one after another from the parent molecule, each radical as soon as detached assuming an atom of water and becoming an atom of maltose. At each detachment the parent molecule draws its remaining groups together to form a new kind of dextrine. As the process goes on the dextrine molecule becomes smaller and smaller—that is, contains fewer and fewer component radicals; the higher dextrines giving a red or brown colouration with iodine, but the lower dextrines giving no reaction with iodine.

It is to be noted that after the transformation has reached its final term there still remains a portion of achroo-dextrine unconverted into maltose. Upon this remnant diastase has only a very slow action. The percentage result, when the reaction is completed, gives, in round numbers, eighty parts of maltose and twenty parts of achroo-dextrine. The eight varieties of dextrine indicated in the above table of equations have not all been obtained in the separate state, but there is strong evidence of the existence of at least several of them as distinct bodies.

The account just given of the transformation of starch has been deduced from a study of the action of diastase derived from malt. The question arises—physiologically an important question—whether the action of salivary and pancreatic diastase is identical with that of malt-diastase. The researches of Musculus and V. Mering[2] give an affirmative answer to this question. These observers found that saliva and pancreatic extract act on starch paste in the same way as malt-diastase, the final products in all cases being achroo-dextrine and maltose, and not dextrose (grape-sugar). At my suggestion Mr. H. T. Brown was good enough to submit the question to a fresh examination in regard to pancreatic extract. His results fully confirm the conclusions of Musculus and V. Mering. He found, however, that there was a slight difference in the results when the action of pancreatic extract and malt-diastase on starch were continued a long time. The pancreatic ferment, in addition to the power, which it shares with malt-diastase, of slowly converting the lowest achroo-dextrine into maltose, exhibited a power of slowly changing maltose into dextrose (grape-sugar) which is not possessed in any degree by malt-diastase. Mr. Brown also informs me that there is in the small intestine a ferment which possesses similar properties.

The respective shares of Saliva and Pancreatic Juice in the Digestion of Starch.

The respective shares of saliva and pancreatic juice in the digestion of our farinaceous food is probably variable and perhaps not quite identical.

As all our farinaceous food is eaten after being cooked, the starch in it is more or less completely gelatinised; it is, therefore, probable that one of the chief uses of salivary diastase in man is to liquefy starch jelly. A very brief contact suffices for this, and it is manifest that the accomplishment of this change is an important advantage in the subsequent operations in the stomach. Our gruels, blancmanges, puddings, and similar farinaceous dishes owe their thick pasty condition to starch in the gelatinous state, and nothing can be imagined more resistent to the rapid permeation of the meal by the gastric juice, and to the pulping of it into a uniform chyme, than the presence of coherent masses of starch paste. If the saliva performed no other service than this it would furnish an important aid to digestion of a meal.

[2] Maly's Jahresbericht für Thier-Chemie for 1878, p. 40.

There has been considerable dispute as to whether, and how far, the saccharification of starch goes on in the stomach. My observations lead to the conclusion that this depends on the degree of acidity of the contents of the stomach, and it is known that this varies within very wide limits. When a meal is swallowed it takes some time for the gastric juice to permeate the mass, and the acidity of the gastric contents is for some time very feeble. As digestion proceeds the contents of the stomach tend to become more and more acid. This is a point which each one can observe for himself. The stomach is by no means reticent of its doings. The posseting which we see in infants goes on in a less degree in the adult, and we are perforce made aware, sometimes inconveniently so by our palates, of the ascending scale of acidity in the stomach. Saliva acts energetically in neutral and in slightly acid media, but its activity is checked and finally arrested when the acidity becomes pronounced. When digestion is proceeding comfortably and normally a certain interval elapses before the acidity of the stomach becomes considerable, and during this interval the salivary diatase continues active, and has time to accomplish a good deal of work. But we must remember that our farinaceous food is, for the most part, not in the most favourable condition for rapid digestion. It is not generally in a state of mucilage, but in the form of a solid paste, as in bread, puddings, and pastry. A good deal of it, too, is imperfectly cooked. Consequently, the larger part of our starchy food reaches the duodenum still unchanged, or only partially changed, and this larger part of the work is consummated by the pancreatic juice in the alkaline medium of the small intestine. I shall have to return to this point in speaking of gastric digestion.

It has been noted as curious that the saliva of man possesses more diastatic power than that of almost any other animal. Among the herbivora, which are such large consumers of starch, the saliva has comparatively little diastatic power; and in some, as in the horse, it is almost or altogether wanting. I apprehend that this is due to the fact that man alone has learnt to cook his starchy food, and that the diastatic power of his saliva has become developed with the opportunity for its exercise. Diastatic power would be thrown away in the saliva of the horse, because he eats his food in the raw or uncooked state, and saliva is without action on raw starch.

When can Starch be said to be fully Digested?

Seeing that in the digestion of starch a number of intermediate products are evolved, the question arises when can the digestion of starch be said to be accomplished? Is maltose the only product absorbed, or are not the dextrines, especially the achroo-dextrines, also absorbed? The dextrines, even those coloured by iodine, are highly diffusible, and pass freely through parchment paper in dialysis. In this respect they contrast strongly with starch jelly, and even with liquefied (or soluble) starch, both of which are undialysable. It seems not improbable that the lower dextrines are largely absorbed. Because if we follow the history of starch after it has been transformed by digestion, and absorbed, we are confronted with the remarkable fact that after absorption the products of starch digestion, or at least a large portion of them, undergo a reconversion in the liver into a substance closely resembling undigested starch. Glycogen, in its essential features, is an exact counterpart of soluble starch. It forms an opalescent solution in water; it is undialysable, and it is transformed by diastase into dextrine and maltose.

It appears reasonable to suppose that it would be an advantage to the economy if that portion of our starchy food which is destined to be stocked in the liver as glycogen should be absorbed at an early period of the digestion, because the less removed the digested product is from starch at the moment of absorption the fewer steps it will have to retrace in recovering the amylaceous state after absorption.

It is not necessary to suppose that the ascending steps of the reconversion are identical with the descending steps of digestion, but it is probable that they are fundamentally alike, seeing the close similarity of the products at the two ends of the journey. At any rate, there is no warrant in the present state of knowledge for the opinion that sugar is the only absorbable product of starch digestion.

Absolute Energy of Diastase.

The notion that the energy of diastase is not consumed in action seems, on *à priori* grounds, to be quite untenable; such a notion contravenes a general principle in physics,

that energy in performing work is expended and finally exhausted. It is easy to show experimentally that diastase is no exception to this rule. Payen and Persoz estimated that malt diastase was able to convert two thousand times its weight of starch into sugar. My own experiments with extract of pancreas indicated a much higher power than this. The following experiment illustrates at the same time the enormous diastatic power of pancreatic diastase and the fact that this power is strictly limited.

A quantity of starch mucilage was prepared, containing one per cent. of pure potato starch—100 cubic centimetres of this mucilage contained exactly one gramme of dry starch. The pancreatic extract employed was prepared in the following manner:—Fresh pig's pancreas, freed from fat, was rubbed up with an equal weight of fine sand until it became a smooth uniform pulp. This pulp was spread out very thinly on sheets of glass, and allowed to dry in the open air for a fortnight. It was then scraped off with a knife, and formed a rough shreddy sort of powder. 125 grammes of this mixture of pancreas and sand were infused, at the temperature of the room, in 1000 cubic centimetres of saturated chloroform water, with a little more chloroform added to insure against decomposition. The mixture was allowed to stand for four days with occasional agitation, and the product was then filtered clear through paper. The extract of pancreas thus prepared proved a very serviceable preparation, and most of my observations on pancreatic digestion were made with it.

This extract was found to be so extremely active that it was necessary to dilute it largely in order to bring the quantities of starch operated on within due compass. Accordingly a dilution was made of one cubic centimetre of the extract in 1000 cubic centimetres of water. Five numbered phials were then severally charged with 100 cubic centimetres of the prepared starch mucilage—so that each phial contained exactly one gramme of dry starch. One cubic centimetre of the diluted pancreatic extract was added to phial No. 1, two cubic centimetres to No. 2, four cubic centimetres to No. 3, six cubic centimetres to No. 4, and eight cubic centimetres of the same diluted extract to phial No. 5. The phials were then corked and placed in a warm chamber, where the temperature was steadily maintained by a Page's regulator at 100° F. (38° C.)

At the end of twenty hours the contents of the phials were examined. All of them were perfectly transparent, and had entirely lost the opalescent appearance of the original starch mucilage, and not a vestige of sediment existed in any of them. The following reactions indicated the progress of the transformation.

No. 1 gave an intense blue colouration with iodine, and when the blue solution was largely diluted and more iodine added, it developed a violet tint which showed the presence of erythro-dextrine; it also reduced the cupro-potassic solution freely.

No. 2 gave a strong blue reaction with iodine, and by diluting and adding more iodine, the colour changed to a deep claret-red, indicative of abundance of erythro-dextrine. This and all the rest gave a strong sugar reaction with Fehling's solution.

No. 3 yielded no blue reaction with iodine, but an intense port-wine colouration of erythro-dextrine.

No. 4 gave no blue reaction with iodine, and only the faintest possible brown colouration with that reagent, showing only traces of erythro-dextrine.

No. 5 exhibited not a vestige of reaction with iodine. It contained neither starch nor erythro-dextrine, but it yielded a strong sugar reaction.

The transformation of No. 5 might be regarded as complete, but the rest still contained starch or erythro-dextrine, or both. Nos. 1, 2, 3, and 4 were restored to the warm chamber and re-examined at the expiration of seven hours. No. 4 no longer gave the slightest reaction with iodine, but Nos. 1, 2, and 3 showed only slight signs of further alteration, and were returned to the warm chamber.

At the end of forty-eight hours from the commencement of the experiment, Nos. 1, 2, and 3 were examined again. No. 1 showed a strong blue colouration with iodine, and also a strong reaction of erythro-dextrine. No. 2 no longer gave any blue tint with iodine, but it exhibited an intense erythro-dextrine reaction. No. 3 only gave a yellowish-brown reaction with iodine of moderate intensity.

After a further sojourn in the warm chamber of seventy hours the contents of the three phials were not found to be sensibly altered; they gave exactly the same reactions as before. It was evident that in these phials the diastatic action had run its course to an end within the period of forty-eight hours, and that the solutions had then come to a state of rest, the ferment had liberated all its energy, the limits of its power had been reached, and the task allotted to it was left unfinished. Nevertheless it had accomplished an amount of work which, considering its infinitesimally minute mass, appears marvellous. We shall now endeavour to measure approximatively the amount of this work as indicated by the above experiments.

The original pancreatic extract, when evaporated to dryness in a water-bath, was found to leave a residue of 1·5 per cent. of organic matter. This organic matter included, besides diastase, a quantity of proteolytic ferment (trypsin) and a certain quantity of the milk-curdling ferment. It also included a certain quantity of digested proteid matter, for in making an extract of the pancreas there is always accomplished some self-digestion of the glandular tissue.

Taking into account these various admixtures, it would appear a very liberal allowance to estimate the diastatic ferment as amounting to one-fourth of the total organic matter. This would give us for the original extract a proportion of diastase in round numbers of 0·4 per cent., and for the diluted extract of 0·0004 per cent.

The proportion of diastase added to phial No. 4 seems to have hit off with precision the limit of quantity required to transform one gramme (15·5 grains) of starch in forty-eight hours at a temperature of 100° F. (38° C.) The amount of diluted extract added to this phial was six cubic centimetres, and on the basis of the above estimate, this represents a quantity of net diastase amounting to 0·000024 gramme. This yields us, by an easy calculation, the astounding result that pancreatic diastase is able to transform into sugar and dextrine no less than 40,000 times its own weight of starch!

The speed at which a given quantity of starch is transformed by diastase depends essentially on the proportion of ferment brought to act upon it. In the above experiments the proportion of diastase was very minute in comparison with the amount of starch, and the action went on slowly for forty-eight hours. But if we reverse these proportions and mix a small amount of starch with a large amount of diastase the transformation is instantaneously accomplished.

If a test-tube be half filled with an active extract of pancreas and a few drops of starch mucilage be quickly shaken therewith, you cannot detect the reaction of starch or dextrine in the mixture, however prompt you may be with the testing—the transformation has followed on the admixture as instantaneously as the explosion of the charge follows the fall of the trigger. Between these extremes there are all gradations. This mode of action differs entirely from what is seen in the operation of ordinary chemical affinity. If you add a drop of acid to an excess of alkali, the acid is instantly neutralized and the action comes to an end; and conversely, if you add a drop of alkali to an excess of acid, the action is equally instantaneous; the affinity of the two bodies for each other is a mutual affinity. But this is not the case with the action of diastase on starch. The starch appears entirely passive in the process; all the energy is on the side of the diastase, and this energy can only be liberated gradually. There is something in this strikingly suggestive or reminiscent of the action of living organisms. To illustrate my meaning, let us compare the particles of the ferment to a band of living workmen whose function is to scatter little heaps of stones. If the heaps are few and the workmen many, all the heaps will be scattered at once, and the energy of the workmen will still remain sensibly unimpaired. But if the heaps are millions and the workmen hundreds, and if the workmen are doomed to labour on until they fall exhausted at their task, the scattering of the heaps will go on for a comparatively long time, and the process of exhaustion will be a gradual one.

I may here mention that the diastatic ferment does not exist in the saliva and pancreatic juice of young suckling animals, except in minute proportions. Its quantity increases when the teeth are cut. In the human infant diastase does not appear to exist in sufficient abundance to digest starchy matters effectively until about the sixth or seventh month. Until this period it is therefore not advisable to administer farinaceous food to infants.

DIGESTION OF CANE-SUGAR—INVERSIVE FERMENT.

Bernard[3] first called attention to the fact, already mentioned, that cane-sugar (saccharose) required digestion both

[3] Claude Bernard, Leçons sur les Phénomènes de la Vie, tom. ii. p. 36. Paris, 1879.

in animals and plants before it could be utilized in nutrition. The cane-sugar stored up in beet-root and in the sugar-cane is changed by ferment-action into invert-sugar before it is permitted to circulate in the sap, and take part in the nutritive operations of the plant. He found also that an analogous transformation was requisite before cane-sugar could be assimilated by animals. He states that when cane-sugar is injected into the blood it circulates therein as an inert body, and is in no degree used as nutriment by the tissues, but is eventually entirely removed unchanged with the urine. Cane-sugar is, however, an important article of food, and is consumed by us in large quantities every day; and we know that when thus consumed it does not behave like an inert matter, circulating a while in the blood, and then being eliminated by the kidneys as a waste product. It is evidently absorbed and assimilated, and must, therefore, somewhere or other be transformed or digested in animals as it is in plants. Reasoning this way, Bernard sought for an inversive ferment for cane-sugar in the alimentary tract; and after searching in the saliva, in the stomach, and in the pancreas in vain, he at length discovered it in the small intestine. In the small intestine he found that cane-sugar was transformed into invert-sugar, and by a similar ferment with that destined for analogous purposes in yeast, in beet-root, and in the sugar-cane.

The transformation of cane-sugar into invert-sugar is represented by a very simple equation:—

$$\underset{\text{Saccharose.}}{2C_{12}H_{22}O_{11}} + \underset{\text{Water.}}{2H_2O} = \underset{\text{Dextrose.}}{C_{12}H_{24}O_{12}} + \underset{\text{Lævulose.}}{C_{12}H_{24}O_{12}}$$

The inversive ferment was detected by Bernard in the small intestine of dogs, rabbits, birds, and frogs. Balbiani found it in the intestine of the silk-worm. It was recognised by myself in an extract of the small intestine of the pig, the fowl, and the hare. It does not exist in the large intestine.

But, although my observations on this subject coincided in the main with those of Bernard, I noted two points which I think merit further attention. The first was that while a piece of small intestine infused in water yielded a mixture which was capable of inverting cane-sugar, the same infusion when filtered through paper until it was perfectly clear had no such power. It seemed as if the inversive ferment did not pass freely, if at all, into true solution, but remained attached to some of the formed elements contained in the intestine. The second point I noted was the extreme slowness of the action. When cane-sugar was added to the unfiltered infusion of intestine, and the mixture maintained at blood heat, it generally took a couple of hours before a reducing effect with the copper test could be obtained. Both these circumstances reminded one of the action of formed ferments, and I could not help thinking that there was here something which required clearing up at some future time.

THE

Gulstonian Lectures

ON

EPILEPSY.

Delivered before the Royal College of Physicians,

BY W. R. GOWERS, M.D., F.R.C.P.,

SENIOR ASSISTANT-PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL, PHYSICIAN TO THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC.

LECTURE III.—PART III.

THE treatment of epilepsy is a subject on which numerical analysis gives little help. A large number of cases are under observation too short a time to enable the effect of remedies to be fairly estimated; and of the cases in which benefit is derived, we have no means of ascertaining how many relapse when treatment is discontinued. My notes of the result of treatment in this series of cases extend to 562 cases only. In the remainder, either the period of observation was too short for a just conclusion to be drawn, or, in the press of out-patient work, the influence of remedies was not noted with sufficient precision. The effect of treatment is more likely to be recorded when it is distinct and considerable than when it is slight. Hence the following figures have no relative value. Of the 562 cases, the attacks ceased while the treatment was maintained in 241; doubtless many of these relapsed when treatment was discontinued, but in a few I have been able to ascertain that the patients remained free from fits even for years after they ceased to take medicine. In 266 cases improvement short of arrest was obtained; the fits being reduced in many to $\frac{1}{10}$, $\frac{1}{20}$, $\frac{1}{50}$, and even $\frac{1}{100}$ of their former frequency. In 55 cases little improvement was obtained by any method of treatment.

Time forbids me to enter at any length on the details of treatment, and I can do little more than mention the remedies which in this series of cases were of most distinct service. The subject of possible modes of action it is better to leave almost untouched. It may be doubted whether a rational therapeutics of epilepsy is yet possible. At any rate, up to the present time remedies used empirically have been of most service.

Although the results show that we must not only rely exclusively upon bromides in our treatment of epilepsy, they show also, as might be expected, that on these our chief trust must still be placed. Of the arrests of fits, 66 per cent., and of the improvements short of arrest, 62 per cent., were due to bromides given alone. Of the three alkaline salts of bromide, that of potassium deserves, I think, as it has popularly received, the first place. I have made a careful comparison between the salt of sodium and potassium in a series of about fifty cases, substituting the one for the other. In a few cases the sodic salt appeared to do better; in the great majority it was distinctly less useful. Bromide of ammonium possesses slightly more power than bromide of potassium, but this is not greater than the larger quantity of bromine which it contains will account for.

The period after its administration at which maximum effect of a dose of bromide is obtained varies, I believe, with the dose. The larger the dose the longer is maximum effect deferred; the smaller the dose the sooner does it occur, and the sooner is its action over. When small doses are employed in cases in which attacks occur at regular times, they should not therefore be given more than two or three hours before the attack is expected. This is contrary to some opinions which have been expressed, but I have several times known attacks arrested when a dose was given some two or three hours before the fit was expected, which were not arrested when the same dose was given twelve hours earlier.

The effect of bromide upon fits appears to be for a time cumulative, just as is, indeed, its action in causing bromism. Attacks may continue under its administration for a time, and yet ultimately cease without any increase in the dose. On the other hand, still later, tolerance, or rather indifference, may be established, and attacks which have been for a time arrested may ultimately recur.

Drugs which increase reflex action, such as strychnia, are now believed to do so by lessening the resistance in the nerve-centres involved. Bromide diminishes reflex action, antagonises strychnia, and it is probable that it does so by increasing the resistance in the centres. If the view above expressed be correct, that the morbid state in epilepsy is essentially an instability of the resistance in the cells, it is also probable that bromide acts by increasing the stability of this resistance.

Bromide is commonly administered in a continuous course, in such moderate doses as will just suffice to keep the fits in check. Given thus it needs to be given frequently. I have more than once observed that a daily quantity which given in two doses did not quite arrest the fits, arrested them completely when given in three doses. If, therefore, the greater convenience of infrequent doses, one or two daily, is preferred, a somewhat larger quantity needs to be given.

When bromide is thus given continuously, it has not seemed to me desirable to increase the daily dose beyond a drachm or a drachm and a half. If this does not arrest the fits, I have very rarely found that larger doses succeed so well as the combination of bromide with other drugs. But it is, I think, open to question whether this method of administration, using doses only just sufficient to arrest the fits, is the wisest in all cases. If bromide cures epilepsy, as without doubt it does sometimes, it must be by effecting a nutritive change in the nerve-cells corresponding to its action, whereby they are rendered permanently more stable. That it, or any other drug, does good in epilepsy by influencing the vascular state of the brain, appears to me without even probable proof. Even if such were its action, we are only driven back to a similar influence in increasing the

stability of the cells of the vaso-motor centre. There are, I think, many grounds for the belief that the change in the nutrition of the cells may be produced more effectually by subjecting the patient *for a time* to the full influence of bromide, giving doses much larger than are needed to arrest the fits, in the hope of producing more readily a permanent nutritive change. In giving bromide thus I have preferred large doses at intervals of two or three days, gradually increasing the dose until it is as large as can be well borne, and then diminishing it. The largest single doses which I have given in this way have been doses of one ounce. This in some patients produces slight stupor, sometimes reaching its maximum on the second day after the dose. In other cases it produces very little disturbance beyond headache. From the marked differences which patients present in their tolerance, it is not well to begin this method of treatment with a larger dose than four drachms.

The value of the various combinations of bromide with other drugs was tested, as far as possible, on a uniform plan. First, bromide was given alone for several months, and then additional drug was added to the same dose of bromide, and the result watched for several months longer. Of the various combinations which are in common use, those with digitalis and belladonna unquestionably deserve, as they have commonly received, the first place. Digitalis is one of the oldest remedies for epilepsy. It was recommended by Parkinson two hundred years ago, and has been perhaps for a still longer time a popular remedy for this disease in certain rural districts in the west of England. I have met with no case in which, given alone, digitalis arrested the fits for more than a few months, but in several cases it effected very distinct improvement. The combination of digitalis and bromide, however, was distinctly more useful than bromide only, in no less than sixty-three cases. In more than half of these, thirty-seven cases, the attacks ceased under its use, although they had continued under bromide alone. In the cases in which cardiac disturbance was associated the combination was almost always superior to bromide alone; but its use is not confined to these cases. Many cases of nocturnal and other forms of epilepsy yielded to the combination, although the attacks had continued under bromide, and this when there was no evidence of cardiac disease. I know of one patient with nocturnal epilepsy who, for two years, under this combination, has not had a single fit, although the attacks occurred every few weeks on bromide only.

In rare cases belladonna alone will arrest attacks. I have met with only one case in which attacks, which continued on bromide, ceased entirely when belladonna was substituted, and this was a case with hystero-epileptic symptoms. The combination of bromide and belladonna, however, was distinctly better than bromide alone in 35 cases, and in 15 of these arrest of the fits was thus obtained.

Indian hemp was first employed in epilepsy by Dr. Reynolds, and is sometimes of clear value. In one case the attacks were invariably arrested for many months by its use, recurring only when the patient ceased attendance, but twice on his resuming attendance the drug instantly arrested the attacks. When bromide was substituted for the Indian hemp the attacks at once recurred. Combined with bromide it is also sometimes useful, and seems to exercise most influence over attacks in cases in which there is persistent headache. The same fact has seemed true of the combination with gelseminum, which is occasionally of marked service.

The use of opium in epilepsy has long been advocated by Dr. Radcliffe, and in some cases it is certainly effective. The combination of bromide and morphia I have rarely found to present special advantages. In the status epilepticus in which attacks occur with great frequency and severity, and where bromide, even in large doses, was useless, I have found small hypodermic injections of morphia of great service.

The combination of bromide with aconite and hydrocyanic acid I have also tried, and found in some cases slightly better than bromide only. The addition of iodide to bromide has been lately said to increase its effect. Occasionally this is true, and in four cases of the series the combination was distinctly better than bromide only, but in many other cases it was ineffective. Even in the cases on the subjects of inherited syphilis it has not appeared of special value.

Zinc unquestionably deserves some of the repute it has enjoyed for more than a hundred years as an anti-epileptic. Of the cases of this series in which it was employed it was distinctly useful in ten, but in only three did the attacks cease. In three other cases attacks which continued under bromide ceased under bromide and zinc, and in a fourth they ceased under zinc, digitalis, and bromide. The oxide of zinc was the form commonly employed. Its nauseating influence constitutes a serious drawback to its use, as toleration is difficult to establish, and I have rarely succeeded in giving more than twenty grains a day. Bromide of zinc has seemed of small value, and is borne badly. The addition of arsenic to bromide in no case produced any marked effect on the attacks. It was used in a large number of cases on account of the readiness with which, it was found, the bromide rash could be prevented by its use.

Bromide of camphor, highly praised by Bourneville, was tried in a considerable number of cases, but without any good results. Turpentine has been recommended by Dr. Radcliffe, and I have seen it produce very striking benefit, but only in cases of hystero-epilepsy.

The use of iron in epilepsy has been discountenanced by high authorities, on grounds which are not altogether beyond question. In rare cases it increased the frequency of attacks; in the majority of cases in which it was used it was borne without any ill result; in many the addition of iron to bromide was attended with a marked and permanent improvement, and in some cases iron alone arrested the fits. The series includes 4 cases which ceased under iron only, and 8 others in which iron alone was distinctly better than bromide, and 19 cases in which the addition of iron to bromide exercised a marked influence. In no less than 11 cases attacks which persisted on bromide, ceased on the addition of iron, and remained absent as long as the treatment was continued.

In several inveterate cases of epilepsy in which bromide had no effect, I have tried borax. In some cases it did no good, but in 12 its value was most distinct. I may mention one or two. In one, fits which had continued on bromide and on zinc ceased entirely on borax for three months, and then only recurred when the medicine was discontinued. In another case the fits continued, about one weekly, during three months' treatment on bromide and on belladonna. Borax was then substituted, the fits at once ceased, and for five months the patient had not a single fit; then he had one in each of the two following months; the dose of borax was increased, and up to the present time, eight months later, no other attack has occurred. In a third case, one or two attacks occurred once a fortnight on bromide. Borax was substituted, and for five months the patient had not a single fit. The doses given have been ten or fifteen grains twice or three times a day. It produces in some patients gastro-intestinal disturbance, and rarely, a form of dysenteric diarrhœa. By others it is well borne, and one of my patients has taken forty-five grains a day for twelve months without the slightest inconvenience, and says that no medicine has ever done him so much good. In cases in which bromide fails, borax certainly deserves a trial.

The use of cocculus indicus in epilepsy, recommended by Dujardin-Beaumetz, has lately attracted attention in consequence of the recommendation of Planat. I have tried the alkaloid picrotoxine in a few instances, but in only one case has it appeared to do good. My own experience of its use has, however, been small, and I am very much indebted to my colleague, Dr. Ramskill, for permitting me to mention some interesting results which he has obtained by the hypodermic injection of picrotoxine. His experience of its effect on the fits when given through the skin is nearly the same as my own of its employment by the mouth. In seven cases in which it was injected, in daily doses of from one to four milligrammes, no beneficial result was obtained; in most cases, indeed, the attacks were rather more frequent and severe. Of course, we are not justified in assuming that the effect of picrotoxine and of the cocculus indicus itself are identical. A very interesting fact has, however, been ascertained by Dr. Ramskill—viz., that picrotoxine in larger doses of from fifteen to eighteen milligrammes will almost invariably produce a fit in twenty or thirty minutes. In one patient, for instance (according to the notes of Mr. Broster, who carried out the experiments), the dose was daily increased, and when more than five milligrammes were injected a sensation of giddiness followed, similar to that with which the attacks commenced. The same effect followed larger injections, and when the dose reached eighteen milligrammes a severe attack occurred thirty minutes later, and an attack always

followed the injection of this dose. In another patient a similar progressive increase of the dose was followed by giddiness and headache, when eight milligrammes were injected. When the dose of fifteen milligrammes was reached a severe epileptic fit followed. Next day a second dose of fifteen milligrammes did not cause a fit, but eighteen milligrammes, two days later, caused a fit in half an hour. After a week's intermission, twenty-four milligrammes were injected, and a severe fit occurred in twenty-five minutes. In a third patient a fit occurred after one injection of eight milligrammes, but ten milligrammes next day caused no fit. Fifteen milligrammes, however, were followed by a fit in thirty minutes, and a second injection of the same dose the following day caused a fit in fifteen minutes. Seventeen milligrammes next day caused a fit in thirty minutes. In a fourth patient a single dose of eighteen milligrammes caused, in ten minutes, giddiness and slight dazzling before the eyes, and in thirty minutes there occurred the usual aura of an attack—a sensation of something creeping up the right arm to the top of the head, and numbness and twitching in the right thigh, but no fit followed, although the patient was stupid and dull for a time just as after a fit.

Among other drugs which I have tried and found useless I may mention benzoate of soda and nitro-glycerine.

In hystero-epilepsy bromides, sometimes useful, fail entirely much more frequently than in simple epilepsy, and the combinations with digitalis and belladonna are also less frequently useful. Iron, especially guarded by aloes, is often of the highest value, quite apart from the existence of anæmia, and next to it valerianate of zinc, morphia, and turpentine.

High authorities have urged on different grounds that the diet of epileptics should contain little or no animal food. In a few observations which I have made by keeping a patient under unaltered medicinal treatment for alternate periods on a diet with and without animal food, I could observe no difference in the attacks, except that in one patient they were slightly more frequent in the periods when animal food was excluded, and in one patient hystero-epileptic attacks on ordinary diet became, when meat was excluded, severe epileptic fits, and again became hystero-epileptic when animal food was restored.

In pure epilepsy the only treatment needed during the attacks is such care as shall secure the patient, as far as possible, from injury. It is very different with the attacks of hystero-epilepsy, which, from their character, severity, and long duration, often furnish the attendants with a task of no small difficulty, and which can, almost always, be cut short by appropriate treatment. The patients often hurt themselves during the attacks, and some control is absolutely necessary. But, as already stated, restraint tends to increase the violence and makes the paroxysm last longer. Hence considerable judgment is often required, so to adjust control as to be efficient and not too much. I have seen these patients put within padded partitions and left alone, but I have never myself found this necessary.

The slighter attacks can be arrested by closing the mouth and nose with a towel for some thirty seconds, after Dr. Hare's method. The profound effect on the respiratory centre, and the related higher centres, caused by the anoxæmia, seems to arrest the convulsive action. Cold water over the head is often successful if applied freely; in severe attacks a moderate quantity only excites redoubled violence, while a second gallon is often more effectual than the first. This has the disadvantage of drenching the patient's head, and often giving cold. When the mouth is open during the attacks a small quantity of water poured into it is often effectual. A much more convenient and more effectual remedy than water, however, is strong faradisation to the skin; applied almost anywhere it will commonly quickly stop the attack. Of ovarian compression I spoke in the last lecture. In this country it is rare that ovarian pressure will arrest an attack. In some cases all these means fail, even when thoroughly used, and I have known such attacks go on, in spite of skilled treatment, for several hours. Chloroform is of little use; its administration is a matter of extreme difficulty, often impossibility, and the attack is commonly renewed when the influence of the anæsthetic passes off. The remarkable effect of nausea in relaxing spasm, led me some years ago to try the effect of injections of apomorphia, and I have found in it an unfailing means of arresting the attacks. After the injection of a twelfth of a grain in four minutes with certainty all spasm ceases, and normal consciousness is restored; in six minutes the patient will get up and go to the sink; in eight minutes will vomit, and afterwards, except for slight nausea, is well. A twentieth of a grain has the same action, but is rather longer in its operation. Moreover, I have found that the treatment is, so far as the hysteroid symptoms are concerned, curative as well as palliative, for the attacks in many cases ceased after a few paroxysms had been thus cut short.

I regret that in this survey of some points in the clinical history of these diseases it has been necessary to omit all reference to many facts regarding symptoms, diagnosis, and prognosis, which are presented by the series of cases analysed. I am conscious that as it is, in the details I have introduced, I have made a large demand upon your patience. But it is only by ascertaining the facts of these diseases that we can hope to learn their nature, or to find the guidance in our efforts at prevention or at cure.

Whatever may have been the nature of the demoniacal possessions of old, few who have watched an epileptic fit can doubt that they have their representatives among us still. The old power of casting them out has gone from the earth; and it is only by the study of their origin and history, and careful experiment in their treatment that we can hope to regain over them such power as may still be possible to man. And the present generation has witnessed an advance in the treatment of these diseases, equalled in perhaps no other branch of therapeutics. Thanks to the influence of one drug, the use of which in epilepsy is due wholly to Fellows of this College, hundreds of epileptics have been cured, and thousands are leading useful lives who would otherwise have been incapacitated by the disease. Although the condition of many sufferers is still gloomy enough, it is not without hope, and to them also, we may surely trust, the progress of the recent past is the dawn of a brighter day.

Lectures
ON THE
PHYSICAL EXAMINATION OF THE MOUTH AND THROAT.

Delivered to the Junior Class of Clinical Medicine, University College,

BY G. V. POORE, M.D., F.R.C.P.,

PROFESSOR OF MEDICAL JURISPRUDENCE, UNIVERSITY COLLEGE; LATE ASSISTANT PROFESSOR OF CLINICAL MEDICINE; ASSISTANT PHYSICIAN, AND PHYSICIAN IN CHARGE OF THE THROAT DEPARTMENT OF THE HOSPITAL, ETC.

LECTURE I.

THE PHYSICAL SIGNS DERIVABLE FROM THE BREATH, LIPS, TEETH, AND MOUTH.

GENTLEMEN,—It is my duty to bring to your notice the various physical signs of disease which are to be obtained from an examination of the throat and windpipe; but inasmuch as it is impossible to properly examine the throat without at the same time examining the mouth and nose, I think I shall be best fulfilling my duty by dealing methodically not only with the throat, but also with the oral and nasal cavities which lie above it.

The physical signs met with in these regions of the body appeal not only to the sight, touch, and hearing, but occasionally to the sense of smell as well; and the first thing which forces itself on our attention is often the odour of the breath.

The *smell of the breath* is a valuable physical sign, and in many diseases is so characteristic as to enable the man of experience to form a diagnosis from it alone with almost absolute certainty. It is impossible to describe the various odours of the breath; experience alone will enable you to distinguish one from the other, and I shall merely content myself with cataloguing some of the most distinctive of them. The smell of drink is the most common of all, and in cases of insensibility is often a valuable indication of the cause. It may give a valuable hint as

to the habits of the patient; and I would here remind you that over-indulgence in alcoholic liquors is one of the most common causes of congestion and catarrh both of the pharynx and larynx. You must not run too quickly to the conclusion that because a man's breath smells of drink he is necessarily a drunkard, for a single glass of wine or beer is sufficient to impart an odour to the breath for some time after it has been taken. When directing your attention to the alcoholic smell of the breath in the presence of the patient, I am in the habit of speaking of it as *oinosmia* (from *οἶνος*, wine, and *ὀσμή*, an aroma), since patients naturally resent having attention bluntly called to the fact that they smell of drink.

The presence of carious teeth imparts an odour to the breath which is quite characteristic, and which, according to Mr. Salter, resembles no other odour except that given off by the genus of neuropterous insects called Chrysopa. Want of attention to the mouth, and allowing food to lie between the teeth and decompose, or the presence of decomposing matters in the crypts of the tonsils, imparts a foul odour to the breath. A disordered stomach also causes the breath to be fetid.

A peculiarly disgusting and perfectly characteristic odour of the breath is present in those cases of chronic inflammation of the nasal and pharyngeal cavities, which are known from this fact as ozæna, and which are most often due to caries or necrosis of the nasal bones which is generally of syphilitic origin. The smell, however, may be present without any disease of the bones in cases of chronic inflammation of the cavities occurring in scrofulous subjects.

In cases of dilatation of the bronchial tubes accompanied by ulceration and copious purulent discharge, the smell of the breath is peculiar and almost diagnostic of the condition, and in gangrene of the lung the odour of the breath reaches a degree of foulness which once smelt can never be forgotten.

In cases of fever, with high temperature, a dry mouth, and the accumulation of sordes on the teeth and gums, the smell of the breath is peculiar. In pyæmia and in diabetes the breath has a sweet odour, but the odour in each of these diseases is perfectly distinguishable.

With inflamed gums the breath is apt to smell. This is peculiarly the case in patients under the influence of mercury, and the term mercurial odour of the breath is one in common use. In scurvy the breath is apt to be very foul. It is needless to say that certain articles of diet, as garlic and onions, and certain drugs, as turpentine, copaiba, and some of the essential oils, are detectable in the breath.

The *inspection of the lips* is capable of furnishing many facts which are of great service in forming a diagnosis. The *form* of the lips is characteristic in different races; thus the thick lips of the African negroes and the thin lips of most European races are well known. In conditions of general plethora the lips look swollen and big. A few cases have been recorded of great hypertrophy of the lips and neighbouring parts, a notable example being given by Mr. Barwell in the eighth volume of the Clinical Society's Transactions.

The *colour* of the lips is a matter of great importance. After great loss of blood the lips may appear of a waxy whiteness, and such an appearance should at once lead to questions likely to elucidate this point. A recent confinement attended by hæmorrhage is the most common cause of this appearance in women. Anæmia and leucocythæmia, arising from no matter what cause, produce a pallor of the lips, and in investigating cases of anæmia, we invariably look to the mucous surfaces of these parts. It is right to remind you, however, that undoubted evidence of hydræmia may be present without any very obvious alteration of the tint of the lips.

The lips are often unduly red in cases of general plethora and in the early stages of many febrile conditions. A cyanotic tint of the lips may be due to extreme cold, to those malformations of the heart which give rise to the condition known as cyanosis, and to a mal-aeration of the blood arising from no matter what cause, atmospheric, pulmonary, or cardiac. A patch of herpes on the lips (herpes labialis) is very commonly seen. It is a common accompaniment of an ordinary cold, and it is well to bear in mind that such an appearance may be indicative of more serious trouble, such as pneumonia. It is sufficiently often an accompaniment of pneumonia to make it incumbent upon us always to investigate this point when we are confronted with a patch of herpes on the lips.

In febrile conditions the lips get dry and cracked, and sordes accumulate upon them. Sordes are collections of dried mucus, evaporated saliva, and food particles, which cannot be removed, owing to the general dryness of the mouth and the paucity of the salivary secretions. This condition of the lips is seen in the most extreme degree in the state known as the typhoid condition, in which also the lips are often brown or almost black.

Round the margins of the lips are occasionally seen cracks, white lines, and little pits, the latter reminding one of the appearance known as the *linea albicantes* which occurs on the abdomen after pregnancy. These appearances occurring on the lips are sufficient to raise a suspicion of congenital syphilis. The other indications of syphilis which we may find upon the lips are: (1) a true infecting sore or hard chancre, which is happily rare; and (2) mucous tubercles, which may be present in cases of congenital or acquired syphilis. These mucous tubercles have the same appearance when seen here as when seen elsewhere—flat, slightly elevated patches, with a dirty-whitish surface, surrounded by a congested areola. Epithelioma is among the more rare diseases of the lips, concerning which one should be on one's guard.

The *movement* of the lips is a matter of great diagnostic importance. The muscular power of the lips may be impaired or abolished in several distinct conditions, such as hemiplegia, facial palsy, bulbar or labio-glosso-laryngeal paralysis, and general paralysis of the insane.

In hemiplegia the lip palsy is often slight, and in very slight cases which have partially recovered, a trifling drooping of the prolabium of the upper lip on one side, just sufficient to destroy the symmetry of the "Cupid's bow," is all that we can detect. The observation of this slight drooping and want of symmetry should always lead to an investigation into the history of the patient, and to questions likely to elucidate the question of hemiplegia. In marked cases of hemiplegia, and in cases of facial palsy from disease or injury to the trunk of the facial nerve, the paralysis of one-half of the lips is easily demonstrated, and on asking the patient to show the teeth it will be observed that the teeth are imperfectly exposed on the paralysed side, and the angle of the mouth is drawn over to the sound side. Facial palsy may be double, and then this want of symmetry is not observed, but the face is expressionless, and the teeth and gums cannot be exposed.

In bulbar paralysis the condition is usually bilateral, and the patient is quite unable to move the lips. In the later stages of this disease the lips waste, and the under lip droops so as to expose the gums and allow the saliva to run out of the mouth.

In general paralysis of the insane there is a paretic condition of the lips, and when they move they do so in a hesitating, jerky manner which is very characteristic.

In alcoholism the movement of the lips is also often tremulous. In chorea the lips are liable to those uncertain jerky movements which are so characteristic of this condition. In "muscular tic" one side of the mouth may be the seat of spasmodic movement. Lastly, in tetanus and spinal meningitis there occurs that condition which is called the risus sardonicus, which is caused by a spasmodic retraction of the angles of the mouth.

Dribbling of saliva is a symptom which is due to many causes. It may be due to an excessive secretion of saliva, a condition seen in cases of mercurial poisoning and in some other states. It is present in cases where there is deficient movement of the lip and tongue, as in bulbar paralysis, or in cases where movement of the tongue is rendered impossible or painful by the presence of sores and ulcers. In patients also with whom the act of swallowing is impaired or painful, as in cases of paralysis or stricture of the pharynx, or inflammation of the tonsils or throat, dribbling of saliva is apt to occur. In children dribbling is a physiological condition, owing to a want of vigour and purpose in the movements of their lips and tongues, and in idiots this infantile condition would seem to be permanent. Old writers considered the dribbling of saliva to be characteristic of idiots and madmen.

An *inspection of the gums* occasionally affords important evidence of disease. Their *colour*, like the colour of the lips, may be pale or red or livid, and is an indication of anæmia or plethora or those conditions mentioned in connexion with the lips which give rise to a cyanotic tint. The gums are sometimes spongy and congested, and liable to bleed at slight causes. This is often the case in depressed conditions of health, arising from whatever cause. It is

present in a marked degree in persons who are under the influence of mercury, and to a less extent in those who are taking iodide of potassium. In leucocythæmia and in Hodgkin's disease the gums are often swollen and pale, and occasionally they are stated to become gangrenous. In purpura hæmorrhage from the gums is a common occurrence. In scurvy the gums are very greatly and remarkably affected. They become sore and apt to bleed at the slightest touch, and get swollen, spongy, and livid. The lividity is stated to be most marked at the free edges. The swelling of the gums is so great as occasionally to obscure the teeth, and in extreme cases they protrude between the lips. They get livid and almost black, and undergo sloughing and ulceration, which causes the breath to be peculiarly offensive. The sloughing may leave the crowns of the teeth exposed, and in such cases the teeth commonly fall out. Dr. Buzzard states that this condition of the gums is by no means invariably present in scurvy, and that all the other symptoms of the disease may be present in a marked degree, while the gums are not noticeably affected. Indeed, the gums in scurvy may occasionally be paler than usual and contracted.

A blue line upon the gum may, in the vast majority of cases, be taken as certain evidence that the patient is suffering to a greater or less extent from lead-poisoning. This "blue line" is due to a deposit of lead sulphide in the tissues of the gum. Dr. Hilton Fagge has made sections of the margin of a gum affected with a lead line, and by the aid of the lower powers of the microscope was able to see that the discoloration was not uniform, but was distributed in the form of rounded loops. The pigmentation was seen to be due to minute granules, and these granules were situated sometimes in the interior of the smaller bloodvessels, and sometimes outside them in the tissue immediately adjacent. The deposit is in reality black, its blue appearance being due to the fact that it is seen through a thin translucent layer of gum. Care must be taken not to mistake the purple congested edge of the gum of persons who do not clean their teeth for the deep blue line which is caused by lead. The blue line is produced by the action of hydrogen sulphide upon the lead which is presumably circulating in the blood. The hydrogen sulphide is produced by the decomposition of food particles lodging between the teeth, and adhering to the tartar. Persons who are careful to keep the teeth clean, and in whom no decomposition of the food particles takes place, may be suffering from lead-poisoning and yet have no lead-line upon the gums. The lead-line once formed, and being due to the deposit of an insoluble salt, may remain for months after the system has been freed from lead. Persons who have been exposed to the action of lead may exhibit no line upon the gums until after the administration of iodide of potassium. This is difficult of explanation, but the fact admits of little doubt. The blue or black discoloration caused by lead is not always limited to the margin of the gums, but may occasionally form black patches on the inside of the lips or cheeks.

Occasionally among the ill-fed and dirtily-kept children of the poor, and especially during the first dentition, the gums become swollen and the edges ulcerate, the ulcerated surface being covered with a dirty-grey secretion. This condition is known as gingivitis accompanied by offensive breath, and some increase in the flow of saliva.

The *teeth* often afford valuable evidence of constitutional conditions. Delayed dentition is apt to occur in children that are debilitated from any cause, but more particularly is this the case in rickets. Finding the dentition delayed, we should always search for other evidence of rickets. The milk teeth should begin to appear at the seventh month, and should be all "cut" by the end of the second year. The teeth appear in the following order—central incisors, lateral incisors, anterior molars, canine and posterior molars; and each of these five groups appears by the seventh, ninth, twelfth, eighteenth, and twenty-fourth month; the number of teeth which a child should have at the end of the months named being four, eight, twelve, sixteen, twenty. It may be some help to the memory to call attention to the fact that when a child is twelve months old there should be twelve teeth in the mouth. These numbers are liable to great deviation even in health. Some healthy children are precocious, while others are backward in the matter of dentition. The teeth may be wholly or in part deficient as the result of congenital defect. Caries or decay of the teeth is so common in this country that very few escape from it. It is more common in women than men, and is predisposed to by pregnancy and by the scrofulous and tuberculous constitutions. It is said to be caused by the generation of acid from the fermentation of food particles lodged between the teeth. There is a condition known as "rocky" enamel, in which the enamel of the teeth is grooved and pitted and honeycombed. This condition is brought about by rickets, or by any depressing illness occurring during dentition. Occasionally the teeth get excessively worn, so that they appear truncated, and the dental arch presents the appearance of a flat level border, the exposed dentine presenting a yellowish appearance. This condition, of which a very good sample was lately attending in my out-patient room, is rare, and is said to be predisposed to by syphilis, and to be favoured by the use of gritty food. Mr. Jonathan Hutchinson has pointed out that a peculiar condition of the permanent teeth often exists in patients who are the subjects of inherited syphilis. The incisors and canine teeth are small, peg-like in shape, narrow at the free edge, and either excavated by a crescentic notch at the margin or marked by a crescentic groove. The conical condition is most marked, according to Salter, in the lower, and the crescentic notch is most conspicuous in the upper incisors. When the teeth are lost very early in life, inquiry should always be made as to whether the patient has taken much mercury, and, if so, for what reason.

The *mucous membrane of the mouth* is sometimes swollen and red as part of a general catarrh. It may be swollen in consequence of gastric irritation, brought about by errors in diet. In children who are ill fed, and especially during dentition, small, circular, painful ulcers called aphthæ very frequently appear upon the gums and the internal surface of the cheeks. They are almost always an indication of gastric disturbance from injudicious feeding. When we get the mucous membrane of the mouth inflamed, and upon the inflamed surface a parasitic fungus (the oidium albicans) growing, we have the well known disease called thrush. The mouth, tongue, and palate and pharynx may be covered with white patches, and we may be in doubt whether these patches are due to curdled milk or diphtheria, but if a small quantity be placed under the microscope with a drop of caustic potash, the well known mycelium and spores of the oidium albicans are easily seen, and serve to clear up all doubts. Whether the fungus is the cause of the inflamed condition or whether the inflamed patches form a fitting nidus for the growth of the fungus is an open question. Thrush never occurs in well nursed children, and if a young child is fed upon good milk and nothing else, thrush seldom appears. When, however, mothers give farinaceous matter to very young children, often combined with milk which is slightly sour, this sticky mixture adheres to the inside of the mouth, and if the mouth be not very carefully cleansed out after every meal, the decomposing food particles irritate the mouth, cause it to inflame, and form a soil upon which the oidium grows luxuriantly.

Thrush is liable to occur in adults towards the termination of chronic illnesses, when they are too weak to cleanse their mouths by vigorous movements of the tongue. I have seen patches of thrush also occurring in a patient the subject of labio-glosso-laryngeal paralysis, because the movements of the mouth were too feeble for the purpose of properly cleansing it. The lesson to be learnt from these facts is that in feeble persons the mouth needs to be artificially cleansed after feeding by being sponged out with some antiseptic, such as a solution of borax, or, perhaps, there is nothing better than peppermint water, which to many persons is agreeable and refreshing.

ON LITHOTRITY;

WITH CASES ILLUSTRATING THE IMPORTANCE OF EARLY DETECTION OF THE STONE; AND STATISTICS OF STONE OPERATIONS IN THE HOSPITALS OF GLASGOW FROM 1795 TILL 1880.

BY GEORGE BUCHANAN,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF GLASGOW.

(Concluded from p. 522.)

NUMERICALLY stated, my experience is far too limited to be of any value; still I give it for what it is worth. I have performed lithotomy fifty-five times, with eight deaths, or one in about seven operated on, a proportion very similar to that obtained by examining tables of lithotomy at all ages,

and involving large numbers of operations. But when we separate cases under from those over puberty, the contrast is striking. Of the whole number, twenty-nine were over fifteen years of age, and the mortality after lithotomy in them was six, or one in five. There were twenty-six cases under fifteen years of age, and the mortality was two, or one in thirteen. On the other hand, I have had twenty-four cases of lithotrity with three deaths, or one in eight. Of these three, one died of apoplexy in twelve hours, some days after the stone was removed. The other two were, I confess, cases that should not have been operated on at all, either by one way or the other; the state of the patient and bladder being very unfavourable to any operative interference. This is just one of the difficulties a surgeon often meets with. His patient has arrived at a stage of suffering when life is unsupportable without relief, and he prefers to accept the remotest chance of success rather than to endure any longer the agony he is undergoing. In such circumstances lithotomy is very likely to be fatal, but if any operation is to be made, it ought to be selected. But these are just some of the cases which in the future will be the subjects of lithotomy, so that in proportion as lithotrity gains ground, and the suitable cases are chosen for it, in the same proportion lithotomy will become less frequent, and, being only reserved for cases unsuitable for lithotrity, will become more fatal.

It is clear, therefore, that the statistics of lithotrity ought yearly to become more favourable in consequence of being restricted to selected cases, while lithotomy will show a higher mortality than heretofore, in consequence of being performed only in cases unsuitable for the other. This must of course, even now, be taken into account in comparing extensive tables of lithotrity and lithotomy. But the concurrent testimony of all who have had large experience of both operations, as Civiale, Sir B. Brodie, Sir W. Fergusson, Sir Henry Thompson, &c., is decidedly in favour of the crushing operation.

Sir B. Brodie performed lithotrity 115 times, with a mortality of 1 in 12. Sir William Fergusson had 109 cases of lithotrity, with a mortality of 1 in 9. His mortality in adult lithotomy in 110 cases was 1 in 3¼. Sir Henry Thompson, in 1878, reported 500 cases of stone operated on in the adult male—the total number of his operations up to that date. The total mortality was 1 in 8¼. Of these, 78 were lithotomy, with a mortality of 2¾; the rest, 422, were lithotrity, with a mortality of 1 in 13. The total of these three operators is 646 cases of lithotrity, with a mortality of 53, or 1 in 12¼. These were all in adult males.

As a contrast, I quote Sir Henry Thompson's table showing the results of lithotomy as performed in a number of hospitals taken together. This table was compiled with the most scrupulous accuracy, all returns being rejected which did not specify the ages of the patients. The table contains 1827 cases of lateral lithotomy of all ages. The total mortality is 1 in 8. But when the cases under puberty are separated from those over that age the result is: under fifteen, mortality 1 in 15½; over fifteen, mortality 1 in 5.

I think therefore that it may be accepted as established that lithotrity is a very safe operation for all suitable cases; and that therefore it is of the utmost importance to detect the presence of stone at a stage when lithotrity is admissible—lithotomy being reserved for cases under puberty, and for stones which have by negligence been allowed to escape notice till they are too large to be safely dealt with by the lithotrite. Like all general propositions, this admits of some exceptions. In the case of very young boys with very small calculi the lithotrite may be used with safety, even though it be necessary to reduce the size by crushing before extraction. Again, in the adult the size of the calculus to be dealt with by the lithotrite must be decided by the composition of the concretion and the manual dexterity of the operator. But the details of these exceptions are too extensive for the scope of this paper.

I shall now illustrate some of the points in the two propositions by a few of the cases which have come under my care.

1. A stone may remain in the bladder for years without causing symptoms demanding an examination of the bladder, if that has not been done on the occurrence of the first symptoms.

In November, 1861, I removed by lithotomy two stones, together weighing 1½ oz., from a boy aged eleven. Three years before he had for a few days very acute pain with passing of blood, but that passed off. Since then he had remained perfectly well till a few weeks before I saw him, when, after a long walk, the former symptoms came on.

2. A stone may be in the bladder for a long time, single symptoms recurring at long intervals, while during the intervening periods it may cause no annoyance at all.

Mr. —— while in London in the summer of 1871 noticed accidentally on one or two occasions a few drops of blood after passing water. He consulted his medical attendant, who took Dr. —— in consultation. They agreed that it was something accidental which did not require treatment. In a few days Mr. —— was quite well. In the summer of 1872, Mr. —— was again in London. One evening he suddenly experienced a desire to pass water with a sharp pain, shooting to the point of the urethra. On relieving himself he observed some blood as formerly. This occurred two or three times during the evening, but next morning he was better. He consulted another physician, who took a light view of his case, told Mr. —— to rest a few days, and have no anxiety. The symptoms passed off, and, as before, Mr. —— was quite well. In the summer of 1873 the same thing occurred in precisely similar circumstances. Mr. —— being a little alarmed this time went to a third physician, who hearing of what had happened formerly gave the same advice—rest for a few days before going back to Scotland, rest for a few days after the journey home. Again the symptoms passed off, and Mr. —— was as well as ever. In October, 1873, Mr. —— was out shooting, when the old occurrence took place—a sudden pain at the point of the urethra, intense desire to pass urine, some drops of blood at the end and after the flow. Mr. —— went to Dr. P. A. Simpson, whom he was in the habit of consulting, who at once suggested the probability of a stone, and asked me to sound him. I detected a stone the size of a Spanish nut. In November I removed it by lithotrity in three weeks, since which Mr. —— has continued in perfect health, and free from all urinary symptoms.

3. Symptoms of chronic cystitis may predominate to such an extent as to withdraw the attention from the necessity of examining the bladder to ascertain if the symptoms are not caused or aggravated by the presence of a stone.

M——, aged thirty-five, had suffered for several years from renal calculi, which caused pain in their passage to and from the bladder. For more than a year he was free from his complaint, but in the spring of 1872 the old suffering returned, and the urine was muddy. He took no account of it until he was on the eve of a visit to London, when he mentioned it to Dr. Fergus, his ordinary medical attendant, who warned him against delay in undergoing medical treatment, and advised him as soon as he got to London to put himself under the care of a medical practitioner whom he had consulted on former visits to London. He was treated for what he was told was inflammation and irritation of the bladder. His symptoms continued to get worse, and there was added occasional obstruction to the flow of urine. He was told that most probably there was a small calculus in his urethra which would come away as the former had done. He was advised to go to Harrogate and use the chalybeate waters before he returned to Scotland. But his symptoms getting worse he came away at once, and on his arrival sent for Dr. Fergus, who expressed his opinion that there must be a stone retained in the bladder. I visited him with Dr. Fergus, and we detected the presence of a stone. This I removed by lithotrity in three weeks, and the urinary symptoms rapidly improved. In a month M—— was walking about free from pain and trouble. The stone was about the size of an almond.

4. An examination of the bladder on the first occurrence of the symptoms detects the stone, when it can be removed with the greatest facility and safety.

Mr. ——, aged sixty-five, suffered from the passage of a renal calculus in 1867. Some time after there was difficulty and pain in passing urine. Now he consulted his medical attendant, Dr. Alexander of Dundonald, who sent him to me. I detected a small hard calculus. A few days after I went to his residence with Dr. Alexander to operate. With a thin-bladed lithotrite I grasped a stone, which I extracted entire, the urethra yielding to the steadily-applied traction. The stone was oxalate, about the size and shape of a damson stone.

W. G——, aged fifty-five, after a few months of inconvenience in passing urine, consulted Dr. James Adams, who detected a stone and sent him to my wards in the Royal Infirmary. On Feb. 21st, 1868, I performed lithotrity, and again on three other occasions. He was dismissed cured on March 8th. Weight of débris of calculus detected thirty-five grains.

5. Postponement of sounding allows the stone to grow to a size difficult and troublesome for lithotrity.

A. W——, aged twenty-seven, had urinary symptoms for more than a year before he mentioned his state to his medical attendant: pain, blood, muddiness of the urine. He was treated for many months with internal remedies, for what he was told was irritation of the bladder. Failing to obtain relief, he applied elsewhere, and he was recommended to go to Bridge of Allan and use the saline waters. Before going he consulted Dr. James Adams, who, suspecting stone, sounded him, detected the stone, and sent him to me. As the stone was larger than medium, it took from the 4th June till the 2nd July to remove it entirely. The débris collected weighed five drachms twenty-five grains.

6. When the bladder is fairly healthy and the urethra capacious, lithotrity is available for the removal of even large stones.

Mr. ——, aged sixty-five, suffered for many years from symptoms of stone before he consulted the late Dr. Fleming, who sent him to me. The stone was large and smooth, but I determined to crush it, as the urethra was large and not irritable. It took a month's time and repeated applications of the lithotrite to remove it, but it was successfully ended. The weight of the calculous matter collected was one ounce and one drachm.

7. When a very small stone is detected in the bladder of a child, it can be removed with ease and safety by a thin-bladed lithotrite.

In November, 1879, Dr. Crawford, of Uddingstone, brought to my house a little patient aged nine years, who had formerly passed uric-acid calculi. Now he was continually crying, and could not retain his urine. On sounding him, I found a small stone retained in the bladder. I put him under chloroform, and grasped the little stone in a thin-bladed lithotrite, and endeavoured to pull it through the urethra; but it was too large to leave the bladder. I therefore crushed it in pieces, some of which came away in the scoop, the rest were washed out with the first and second flow of urine.

The foregoing cases are ordinary examples of what are common occurrences; they are introduced, not as presenting anything new, but as good illustrations of the various points referred to in the two propositions with which I commenced this paper.

Statistics of the Operations for Stone in the Glasgow Hospitals.

The following *résumé*, though stated in a very few figures, represents an amount of labour which I had no idea of when I began, and which I could not have accomplished without the kind assistance of the house-surgeons in the Royal and Western Infirmaries, and particularly of Drs. M'Lachlan and Harkness.

The figures till 1859 are copied from a paper which I laboriously compiled, and published in the *Glasgow Medical Journal* for April, 1859.

From that date till 1870 the figures are taken from the printed annual reports of the Glasgow Royal Infirmary, the tables of which contain the numbers, sexes, and results, but not the ages. The ward journals and operation books during the period referred to are most imperfect; many have been lost; in others cases are omitted or not completed.

From 1870 till 1880 I have been able to make an accurate table. I first got all the cases collected from the hospital records, and submitted them to the surgeons themselves (except one who died in 1875), so that we have a clear starting-point for future statistics from Jan. 1st, 1870.

From the opening of the Royal Infirmary in 1795 till 1859 accurate records have been found of 159 cases of lithotomy in the male, with 23 deaths, or 1 in about 7 operations. Of these 95 were under fifteen years of age, with 6 deaths, or 1 in 15⅔ operations. There were 64 above fifteen years of age; of these 13 died, or about 1 in 5 operations.

From 1859 till Jan. 1st, 1870, there were 84 cases of lithotomy in the male, but the ages cannot be accurately ascertained; of these 8 died, or 1 in every 10½ operations.

THE DIAGNOSIS OF TUMOURS OF THE CEREBELLUM.

BY STEPHEN MACKENZIE, M.D., F.R.C.P.,
ASSISTANT PHYSICIAN TO, AND LECTURER ON PATHOLOGY AT, THE LONDON HOSPITAL.

(Continued from p. 524.)

THE most valuable signs of intracranial tumour are headache, vomiting, and pain in the head, especially when associated with convulsive or paralytic affections. I cannot here discuss the qualifications as to the value of these symptoms beyond remarking that the seat of the headache bears no necessary relation to the seat of the lesion, that vomiting is not always a pronounced symptom in children, and that optic neuritis (though not absolutely conclusive) is the best evidence of the existence of some intracranial growth.

Assuming that the presence of these symptoms assures us of the existence of an intracranial tumour, it must be borne in mind that they tell us nothing as to its situation or nature. These have to be determined by other signs and symptoms. The most important signs of the location of a tumour in the cerebellum are—(1) a reeling gait, (2) tonic convulsions, (3) movements of the eyeballs, (4) enlargement of the head.

1. *Reeling gait.*—This is usually one of the earliest and most characteristic symptoms of cerebellar disease. The "cerebellar reel," or stagger, differs entirely from the walk in locomotor ataxy, and is most like the reel of a drunken man. I have known persons with cerebellar tumour to be accused of indulging. This reeling has been attributed by Dr. Hughlings Jackson to paresis of the spinal muscles. "The seemingly erratic action of the legs in some cases of cerebellar disease is for the preservation of the balance consequent on the spinal paralysis: the patients keep their legs widely apart, and, so to speak, their legs run after the trunk to underpin it in its various inclinings from side to side and from back to front." Later in the progress of the case the spinal weakness increases to such a degree that the legs are no longer able to prop up the trunk, and the patient becomes unable to walk or stand. At the same time all movements of the legs are preserved when the patient is in the recumbent position.

2. *Tonic convulsions.*—This symptom is of the greatest importance as distinctive of cerebellar disease. It may be broadly stated that clonic convulsion is associated with cerebral disease, tonic convulsions with cerebellar disease. The degree of tonic spasm met with in connexion with cerebellar tumours is variable. Sometimes it is limited to retraction of the head, as in Case 1. Usually with this there is extension of the spine—opisthotonos,—which in some instances, as in Case 3, is as extreme as in surgical tetanus, and the range of the two is so much alike as to afford the strongest reasons for the belief that tetanus is an affection of the cerebellum. The tonic contractions are not limited to the muscles of the limbs and trunk; when the convulsion is carried a stage further the legs are extended, often to an extreme degree, and the toes are turned in, whilst the arms are semiflexed and rigid, the fingers being tightly clenched upon the thumbs. In fact, the whole of the muscular apparatus concerned in locomotion is involved, and, as in extreme locomotory efforts, nearly every muscle of the body is brought into play, we find nearly every muscle rigidly contracted. Not only are the muscles of the trunk and extremities rigid, but the abdominal muscles are hard and board-like. In some cases the facial muscles are contracted, giving rise to the so-called "risus sardonicus." This tonic contraction is at first, usually, paroxysmal, the patient between the attacks being able to move the neck, trunk, and extremities. Later in the progress of the case there is permanent rigidity, the patient maintaining the "cerebellar position," but there occur paroxysmal exacerbations of the contractions. The reeling gait and tonic spasms are both expressions of disorder of the locomotory apparatus, of which the cerebellum is the chief governing centre. I shall discuss later how disease brings about its effects.

3. *Movements of the eyeballs.*—These are frequently observed in connexion with cerebellar tumours. The movements of the eyes are generally parallel, and may be upwards, downwards, horizontal, or oblique—most commonly the

latter. Sometimes they are only noticed during the convulsive attacks, when the eyes may be fixed in one or other direction, or may oscillate backwards and forwards in some particular direction. Later, when there is permanent rigidity, the eyes may incline strongly and persistently in one direction, with parallel oscillatory movements. These movements of the eyeballs from cerebellar disease are very interesting in connexion with the results of the experiments of Majendie, Ferrier, Hitzig, &c., and have important physiological bearings, Dr. Hughlings Jackson pointing out that the cerebellum contains processes of the eye movements and locomoter movements for estimation of distance.[1]

4. *Enlargement of the head.*—Though not invariably present, and when present not absolutely pathognomonic of cerebellar tumour, enlargement of the head, in association with the other localising symptoms, is a sign of the greatest value. The enlargement, in character, resembles that of hydrocephalus, being of exactly the same nature. The bulging is greatest above the ears, the forehead protrudes, the fontanelles open, and the sutures gape. The integument of the head becomes very thin and transparent, and the superficial veins are prominent (anastomosis?). The cause of the enlargement of the head is an internal hydrocephalus, as described at some length in Case 2. All the ventricles are found enormously dilated and deformed; full of fluid, generally clear, sometimes straw-coloured. The brain is squeezed out into a thin sac or capsule, containing the fluid: its substance is sometimes softened. The hydrocephalus is usually ascribed to pressure on the veins of Galen, which by increasing the lateral pressure on its radicles causes exudation of their fluid contents, in the same way that pressure on the portal vein causes ascites. It will be readily seen from the diagram, Fig. 4, that a tumour of the cerebellum, especially of its middle lobe—a favourite situation—will be extremely likely to compress the vena Galeni. But I believe that whilst this may be a contributory factor in the production of the hydrocephalus, it is neither the sole nor essential one.

FIG. 4.

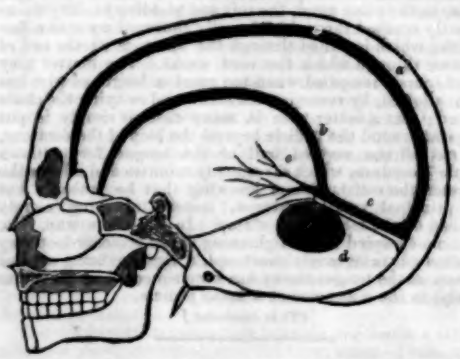


Diagram to show compression of veins of Galen by tumour of cerebellum, especially of middle lobe. *a*, Superior longitudinal sinus. *b*, Inferior longitudinal sinus. *c*, Straight sinus. *d*, Tumour beneath tentorium. *e*, Veins of Galen.

Granting that a tumour pressing upon the veins of Galen causes dropsy of the ventricles, as long as the outlet of the general ventricular cavity remains patent, as the fluid collects it will flow away. Moreover, if the pressure be extreme, it will cause obliteration of the vein. But it will readily be seen by reference to the diagram, Fig. 5, that subtentorial tumours, especially when involving the middle lobe, will be extremely likely to cause constriction or obliteration of the cerebro-spinal foramen or some point above this—the fourth ventricle or aqueduct of Sylvius. Such was certainly the condition in Case 2, where the medulla oblongata was strongly squeezed antero-posteriorly. I have seen the same condition in other cases. When the communication between the general ventricular cavity and the subarachnoid space is obliterated, the fluid poured out by the choroid plexuses, and possibly the obstructed vena Galeni is dammed up, distends the ventricles, and causes the extreme hydrocephalus sometimes found. This view was entertained by the late Mr. Hilton, and some instructive cases are mentioned by Wilks and Moxon.[2] As these authors remark, we see a like result brought about sometimes in chronic internal hydrocephalus. I recently made a necropsy in such a case, and found old and recent basilar meningitis glueing the membranes and obstructing the cerebro-spinal foramen. Some valuable observations on this subject have been made by Drs. Gee and Barlow.[3]

FIG. 5.

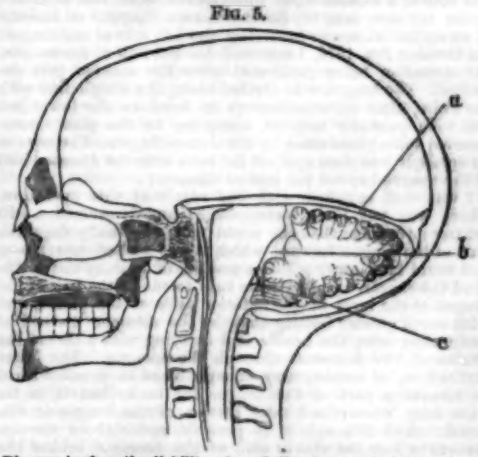


Diagram to show the liability of cerebellar tumour to interrupt the communication between ventricular cavities and subarachnoid space. *a*, Tentorium cerebelli. *b*, Fourth ventricle. *c*, Cerebro-spinal foramen. A tumour in situation of the cross would obliterate the cerebro-spinal foramen, above that point, the fourth ventricle.

The effects of this dropsy of the ventricles is very interesting and characteristic. The very gradual and equable (water) pressure to which all parts of the brain are subjected cause a gradual "blotting out" or dissolution of what mental faculties have been obtained, and the order of this blotting out is very instructive to the psychologist. From a conscious volitional being, the patient is reduced to a mere automaton, or to a vegetative existence. In this condition he may continue for a considerable time.

(To be concluded.)

1 Clinical and Physiological Researches on the Nervous System, p. 25.

2 Pathological Anatomy, p. 215.

3 Cervical Opisthotonos of Infants, St. Bartholomew's Hospital Reports, vol. xiv., p. 22.

ON REMOVAL OF THE TONGUE BY MEDIAN DIVISION OR SPLITTING.

BY W. MORRANT BAKER, F.R.C.S.,

ASSISTANT-SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, AND SENIOR SURGEON TO THE BYELINA HOSPITAL FOR SICK CHILDREN.

A FEW years since I read with much interest in an address on Clinical Surgery, delivered in the University of Glasgow by Dr. George Buchanan, that he had found it a good plan, in removing one-half only of the tongue for cancer, to divide the organ in the middle line with the knife, after sawing through the lower jaw at the symphysis. Dr. Buchanan claims for this operation the advantage of being able to remove in many cases all the disease, and of saving, in part, those muscular attachments of the hyoid bone to the lower jaw, the complete severance of which had led to so much trouble in Mr. Syme's earlier cases in which he divided this bone as a preliminary measure to removal of the tongue.

It seemed to me, after reading Dr. Buchanan's paper, that the method of dividing the tongue in the middle line with the knife was capable of much wider application than to those cases only in which it was requisite to saw through the lower jaw. In other words, the use of the knife could be advantageously combined with that of the écraseur in cases in which the latter instrument had been hitherto used to the exclusion of the knife, on account of the fear of trouble-

some hæmorrhage. The anatomical fact that there is but a sparse anastomosis of the branches of the lingual vessels across the middle line of the tongue could be turned to good account, it seemed to me, so far as the employment of the knife was concerned; while the écraseur could be slipped, after division of the tongue in the median line, over the half which it was desired to remove and complete the operation.

I soon had an opportunity of performing the operation in the case of a woman aged thirty-seven, who was admitted under my care into St. Bartholomew's Hospital on account of an epithelial cancer involving the left side of the tongue. On October 7th, 1876, I removed the left half of the tongue, the operation being performed after the manner just described. The tongue was divided along the middle line with the knife, after its attachments in front to the lower jaw had been partially severed, according to the plan recommended some years since by Sir James Paget. The wire of an écraseur was then applied far back over the diseased half of the tongue beyond the seat of disease.

I was well satisfied with the result of this operation. There was but little hæmorrhage; and it seemed a still greater advantage that one could more effectually draw the part of the tongue forward which it was wished to remove, and could take away a better margin of healthy tissue behind the cancer. It was quite easy to cut off the half of the tongue at the level of the anterior arch of the palate, and with much greater facility than by the common method of perforating with the needle and carrying with a thread the chains of two écraseurs through the opening. The latter method is, of course, easy enough when it is not wished to remove a part of the tongue far back, but it is far from easy when the hinder portion of the tongue is diseased. And although it is possible under these circumstances to loop the wire or cord of the écraseur behind the disease with the help of curved needles thrust through the tongue behind the cancer, yet the loop when tightened up is almost certain to squeeze forward the needles; and the back part of the disease and not healthy tissue is apt, after all, to be crushed through, and a portion, therefore, to be left behind—a result which it is impossible to take too much care to avoid; for if there be one part of the body more than another in which a wide margin must be given to malignant disease, in an operation for its removal, it is the tongue. To remove only just so much of the organ as can be seen to be diseased with the naked eye is a useless procedure, so far as any long immunity from recurrence is concerned.

It may be well to mention here a few details, which render the performance of the operation easier, and may prevent some of the minor troubles which occasionally occur in the course of it. And I shall presume that a case is being dealt with in which the cancerous disease is extensive and reaches somewhat far back.

After the introduction of a suitable gag and the removal of any sharp or jagged teeth which might be in the way of the operator, two threads are passed through the tongue about an inch behind the tip and half an inch on each side of the middle line. The tongue being now drawn forwards and upwards, the frænum and, as far as it may seem necessary, some of the muscular attachments of the tongue to the lower jaw in front are now snipped through with strong, rather curved, blunt-pointed scissors, and the scissors are then "run" along the floor of the mouth at the side, beneath the mucous membrane, as far back as may seem requisite, keeping close to the lower jaw both for the avoidance of hæmorrhage and for the sake of being clear of the disease. The operator now with his forefinger clears the tongue in front and at the sides, and drawing it well forward again and giving one thread to his assistant while he holds the other himself, he cuts steadily along the middle line of the tongue from the tip backwards, and farthest along the mucous membrane. On the withdrawal of the knife, the finger is now again introduced, and it will be found quite easy to complete with it the median division of the tongue by a little tearing or splitting between the two halves. The only part which cannot be thus torn is the mucous membrane of the dorsum. Hence the advice just given to divide this with the knife as far as may seem necessary for getting beyond the level of the disease. The écraseur is now slipped over the diseased half of the tongue; the assistant turning the screw while the operator keeps the loop as far behind the disease as possible. This is, of course, one of the most important parts of the operation; any want of care at this stage being shown afterwards by the narrow margin of healthy tissue, or by none at all, left attached to the diseased mass. The insertion of curved needles behind the disease, in order to ensure the division by the écraseur of healthy tissue, is often advisable, but, for the reasons previously given, must not be considered a sufficient safeguard in the absence of free separation of the tongue's attachments in front and at the sides.

The écraseur employed should be one curved "on the flat," and a strand of twisted wire or strong whipcord will be found more serviceable than the linked chain, which, from working only in one plane or nearly so, is much less readily looped far back.

In all cases in which, from the extent of the disease backward, or in the floor of the mouth, any difficulty is anticipated in placing the loop of the écraseur well beyond the tumour, the cheek may be divided with advantage by an incision extending from the front border of the masseter to the angle of the mouth. This measure, indeed, though not uncommon, is, I am inclined to believe, much less frequently adopted than it might be, especially in cases in which the cancerous affection has invaded the floor of the mouth.

If combined with division of the frænum, and as much of the muscular structures which tether the tongue in front as may be safely divided, and if, at the same time, the mucous membrane of the floor of the mouth be cut through, so as to form a sound boundary-line for division in this direction, I have found that division of the tongue along its middle line is an excellent preliminary measure, not only in operations for removal of half the tongue, but of the whole organ also. The two halves are more completely under control than the tongue as a whole, and by working with two écraseurs simultaneously no time will be lost.

It sometimes happens, and especially when wire or whipcord is used instead of the jointed chain, that the portion of the tongue which has been noosed is not completely severed, even when the écraseur has been screwed up to the hilt; and this is much more likely to happen when the part of the tongue which is being divided is healthy than when the loop has been placed only just beyond, or not beyond, the diseased tissue. In the latter case the comparatively hard and brittle cancerous structure is easily crushed through; while, on the other hand, the soft and yielding healthy tissue is partly crushed through and partly squeezed up into a fine pedicle, which is pulled through the aperture at the end of écraseur through which the cord works. The matter may be, of course, remedied when too great a length of wire has been allowed, by reversing the screw and re-tying the chain or cord;[1] but a better plan in many cases is simply to put a ligature round the pedicle beyond the loop of the écraseur, and cut off the severed half of the tongue forthwith—a simple procedure, which saves many minutes and affords the operator the satisfaction of knowing that he probably has the principal vessel ligatured, instead of lying merely crushed on the face of the stump. In the same way, too, the time occupied in the tightening of the écraseur-loop may be often advantageously shortened, a ligature being applied so soon as the tongue-tissue has been squeezed up (of course slowly) to the dimension of a small pedicle.

(To be concluded.)

A MEDICO-TOPOGRAPHICAL REMINISCENCE OF THE WEST INDIES;

BEING CHIEFLY AN ACCOUNT OF THE HILL STATION OF NEWCASTLE, JAMAICA, WITH SPECIAL REFERENCE TO ITS CLIMATE AND ITS FLORA; IN CONNEXION WITH THE EXCEPTIONAL IMMUNITY FROM MORTALITY ENJOYED BY THE 29TH REGIMENT DURING THE YEARS IT WAS STATIONED IN THE COMMAND.

By SURGEON-MAJOR BOILEAU, B.A., M.D.,

DIPLOMATE IN STATE MEDICINE, UNIV. DUBLIN, ETC.; ASSISTANT-PROFESSOR OF PATHOLOGY, NETLEY; AND FORMERLY MEDICAL OFFICER OF THE 29TH FOOT.

DURING a continuous residence of three years and three months in the West Indies, it was my good fortune to lose by the hand of death but one of the men entrusted to my professional keeping. The fatal case was that of a young recruit who died of acute hæmorrhagic phthisis a few months after landing from England. Such experience was all the

[1] An écraseur well adapted for this purpose has been constructed for my colleague, Mr. Harrison Cripps, by Messrs. Arnold, West Smithfield

more gratifying from the fact that there was no *primâ facie* reason to expect it, but quite the contrary; for the climate of the West Indies was until very recent years notoriously a most unhealthy one, and even the 84th Regiment, which the 29th relieved in Dec. 1869, suffered most severely. I shall dwell on two other factors adverse to favourable anticipations: first, that Newcastle, Jamaica, as an inhabited locality, is not 4000 feet above sea level, as it is generally represented to be; and secondly, that its climate is not temperate, as it has been described to be, but tropical.

Fifteen months of my residence in the West Indies was spent in Barbadoes in medical charge of the head-quarters of the 29th Regiment, the remaining two years in Jamaica, where for part of the time I was in charge of the whole regiment, and subsequently of a three-company detachment. I believe I am safe in saying that no regiment ever spent three years in the West Indies with so little fatality as the 29th Foot during the early part of the present decade. I shall endeavour to account for its immunity when I have concluded my remarks on the climatology of the station. I hope that my observations may be found of some value by those interested in the welfare of our troops abroad. It is interesting to know and profitable to reflect upon the fact, that the 29th Regiment, in the early part of the present century, was, in the very same quarter of the globe, in a few years almost annihilated by mortal diseases.

The military station of Newcastle, Jamaica, is situated on the Port Royal range of mountains, eighteen degrees north of the equator, seventeen miles from the sea, and about 3600 feet above it. From boreal influences it is quite protected by an amphitheatre of high hills, and it is of great importance to bear in mind that the station is not situated on an elevated plateau many miles from the lower lands, but that it is built on a hill ridge having very deep valleys on either side converging towards the south. The station is consequently exposed to the exhalations and other influences of a region the altitude of which is much less than 3000 feet above sea level. The air of these valleys is constantly swept upwards, and I might draw a very tropical picture of their vegetation, such, indeed, as might be expected of any place having the same altitude, latitude, and aspect.

The elevation of Newcastle is generally accepted to be 4000 feet above sea level, but in reality this is not the case, and a consideration of the height of the station is of importance in connexion with the fact that surprise is manifested when yellow fever invades the place. Only a very small portion of the cantonment is at or above 4000 feet. The quarters of the married people, and of the non-commissioned officers and men, are all below the altitude at which the hospital stands—viz., 3800 feet. Above 4000 feet the only occupation consisted of a few officers' quarters, the offices and the workshops of the Royal Engineers, and the garrison stables. Thus, more than nine-tenths of the inhabitants lived below 3800 feet. It is, therefore, evident that the old rule, an elevation of 4000 feet confers immunity from yellow fever, is not invalidated by the occurrence of the disease at Newcastle, Jamaica.

The whole station commands towards the south a widely extended view, stretching over the lower range of hills, with the plains of Mona, and of Liguanea beyond, and farther off the Caribbean sea, bounded by the horizon, eighty-three miles distant. The semicircular range of hills which within a couple of thousand yards northward of the station half encompasses and protects it, culminates in St. Catherine's peak, a summit which rises to the height of 5000 feet above sea level.

The buildings consist of wooden huts, well constructed and well ventilated, and well exposed to light, in which very important respect no station could be more favourably situated.

I will not dwell on the geology, the physical geography, or the natural features of the place. A perusal of Sawkins' "Geology of Jamaica" will repay those interested in such subjects. The useful mineral products of the place are almost nil, even stone for building purposes being procured with difficulty; it is required for the construction of foundations and for the strong retaining walls, without which the station would soon be swept away by the tremendous rains which occasionally deluge it.

The flora of the place may be studied in Grisebach's "Flora of the West Indies," or in Macfayden's "Flora of Jamaica." The learned professor of Göttingen, whose work has been published under the auspices of the Secretary of State for the Colonies, laboured under the apparent disadvantage of never having been in the West Indies; a fact hardly to be suspected, so accurate are his descriptions of its plants. Macfayden's work was never completed; it is difficult to procure. A work published by Dr. D'Anser about the beginning of the century contains an interesting account of all the plants of the island reputed for their curative powers.

The vegetable productions of the immediate neighbourhood of Newcastle include the following:—Coffee. Yam, the edible tubers of which are largely used in place of potatoes; it is a species of *Dioscorea*. Bananas; plantains; sweet potatoes, or tubers of the *Ipomœa Batatas*, a convolvulaceous trailing plant. Oranges; limes; lemons. Various herbs of the *Brassica* family. Ochra (*Abelmoschus esculentus*), a malvaceous herb, the capsules of which contain a nutritive mucilage, much used in soups. Cherimolia, and several other most agreeable fruits of the custard-apple order. Melons, mangoes, pine-apples, and the Avocado pear, a fruit much esteemed, and known as "subaltern's butter"; the tree which bears it (*Persea gratissima*) is a species of *Laurineæ*. The myrtle family provides guavas, allspice, pomegranates, and rose-apples (*Jambosa vulgaris*). The allied family *Melastomaceæ* yields the American gooseberry (*Heterotrichum patens*), and the *Rosaceæ* supplies blackberries and strawberries in abundance. The winter cherry, better known as the Cape gooseberry (*Physalis Peruviana*), grows wild; it is an agreeable subacid fruit, resembling our own grossularia, but it belongs to a very different order—viz., *Solaneæ*. The tobacco plant attains a height of five or six feet, and flowers freely. The annual thorn-apple (*Datura stramonium*) flowers a little below the station, whilst its arborescent relative, the *Brugmansia*, or *Datura suaveolens* of Peru, is the commonest of all plants about the cantonment; it is known as the "bell-flower," and is often mistaken for another "bell-flower," the *Solandra grandiflora*; the latter is, however, a scandent plant, with terminal flowers. The castor-oil plant is quite common, and the showy bracts of *Poinsettia pulcherrima* are perhaps the most conspicuous objects on the hill. Another of these equinoctial spurgeworts which thrives there is the *Euphorbia splendens*, an obnoxiously-spiky plant, and one that has a fitting companion in the *Cæsalpinia horrida*, a most prickly shrub introduced from the East Indies for growing fences.

Amongst other well-known medicinal plants that the climate suits is the *Cissampelos pareira*, most appropriately called "velvet leaf." I found it forcing its way through the tangled mass of under-shrubs, which contend for existence below the Warwickshire-road. Growing near it I found an annual herb, which the negroes call "semencontra;" it is not, however, an *Artemesia*. It is *Chenopodium ambrosiodes*, sometimes known as Mexican goosefoot. It is reputed to possess anthelmintic powers. The arnotta (*Bixa orillana*), which yields the well-known dye, may be found just below Newcastle, and indigo grows abundantly in its immediate vicinity. Cardamoms ripen their seeds, and wild ginger (*Canna*) abounds so as to be a perfect nuisance. Yuccas flower, and bamboos attain a height of twenty-five or thirty feet. Guinea-grass (*Panicum maximum*), an excellent food for horses, and Bahama-grass (*Cynodon dactylon*), equally good for cattle, might be extensively grown. Foxtail-grass (*Anatherum*) reaches the height of five or six feet, and is, I believe, prized for thatching purposes, in consequence of its enduring properties. Lemon-grass (*Andropogon Schœnanthus*) abounds. The natives make an antipyretic and diaphoretic drink from it. Its odour is very agreeable and powerful; in fact, it is one of the three most strongly-smelling plants of the hill, the second being *Micromeria obovata*, a common wild labiate shrub, known also as *Zygia aromatica*, and smelling powerfully of peppermint, and the third is a most fragrant, yellowish-flowered plant belonging to the *Scitamineæ*, and which, I presume, is *Hedychium coronarium*, or the sweet-smelling garland flower.

The fauna of the station I will not dwell on. It may be studied in those two excellent works of the accomplished naturalist P. H. Gosse—viz., "Birds of Jamaica" and "A Naturalist's Sojourn in Jamaica."

The climate of Newcastle is equable; and, as far as our experience enabled us to judge, very healthy; but the sad experience of other regiments prove how foolish it is to generalise concerning any place, even after a three years' residence. The 29th Regiment did not lose a single officer, man, woman, or child from any disease attributable directly

or indirectly to climatic, epidemic, or endemic causes. We had, it is true, some fifty cases of fever amongst the men alone during our first year at the station, and many more subsequently, but all did well, not even one being invalided. Whilst Clotho and Lachesis were busy, Atropos slumbered.

The annual rainfall at the station is large. I have measured twelve inches in one day; yet, although the place may be said to be in the region of clouds, the climate is not always damp. Generally speaking, a cloudless sky was constant between sunset and 9 or 10 o'clock the following morning; rain during the night was an uncommon occurrence. The permeable and absorbent soil and the sloping declivities contribute greatly to the prevention of a humid atmosphere. The upper part of the station is certainly more moist than the lower, as may be inferred from the fact that ferns of the *Hymenophylleæ* tribe may be gathered in abundance a little above the cantonment and the upper huts, whilst in the neighbourhood of the lower ones none can be found. The barometric column varies little. At the highest point of the station it stands about four inches lower than at the sea level. The reaction of the ozone papers I frequently found to be near the maximum. The electrical state of the atmosphere varied extremely. In one year disturbances were constant and often very great, the storms being occasionally exceptionally severe, whilst in another year the sound of thunder was heard but seldom. On the 15th September, 1870, there occurred an unusually magnificent thunder-storm. On the 17th and 18th of the following November there was a very large rainfall—viz., eighteen inches. The damage to the station caused by this flood cost upwards of one thousand pounds to make good. The direction of the wind was variable, but generally from the north-east, as might be expected from the latitude of the place. Currents blow up and down the gullies, and in and out of the passes in all directions, so that it is only by observing the movements of the clouds that the prevailing direction of the wind can be ascertained.

(To be concluded.)

FRACTURE OF SPINE FROM DIVING INTO SHALLOW WATER.

BY J. H. WILSON, M.R.C.S., L.S.A.

A BRIEF record of the following case may be read with interest:—

P. S——, aged eighteen, a pupil at the Oundle Grammar School, whilst bathing on July 15th, 1878, took a header into between three and four feet of water. It being observed that he did not rise to the surface, the attendant (who is always present to look after the safety of the boys) dived in and fetched him out in a state of insensibility. After a few moments he rallied from the concussion and was conveyed home perfectly sensible, but helpless.

Examination revealed complete loss of motion and sensation of the lower extremities and the trunk up to two inches above the mammary line, with great pain over the cervical vertebræ, inability to support the body in the erect position, or move the spine in any way. No displacement of the vertebræ could be detected. There was partial paralysis of the upper extremities, and sensation was more pronounced on the ulnar than the radial aspects of the arms. There was retention of urine with priapism; *breathing almost entirely diaphragmatic.*

The usual treatment for fractured spine was carried out—skilled nurses were obtained; every possible attention was paid the patient to promote recovery.

At first there was considerable constitutional disturbance: pyrexia, loss of appetite, &c.; periodic attacks of dyspnœa, complicating the diaphragmatic breathing; ammoniacal urine (catheterism being continued). This condition of things was followed after a time by sloughing of tissues, which progressed steadily to the termination of the case. For five months we had to compete with severe bedsores, wholesale sloughs, disintegration of the knee-joints, the attachments of which became quite disorganised, and other signs of low vitality, the patient succumbing to his injury on Dec. 24th, or twenty-three weeks after the accident.

Post-mortem.—At the autopsy on Dec. 26th the fifth cervical vertebra was found to be fractured vertically through the body. The fracture had apparently partly united towards the posterior part of the spinal canal. Spinal cord at this point was reduced to a mere slender thread, only a few fibres remaining by which either motion or sensation could be conveyed.

The points of interest in the case are: (1) the position of the fracture—vertically through the body; (2) the length of time the patient lived, taking into consideration the seat of the fracture and the severity of the injury to the spinal cord.

Oundle.

A Mirror of HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum, tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

GUY'S HOSPITAL.

[OBSTETRIC WARD.]

TWO CASES OF RETENTION OF URINE; REMARKS.

(Under the care of Dr. BRAXTON HICKS.)

CASE 1. *Enormous Distension of Bladder; Retroversion of Uterus; Pregnancy three months and a half; Œdema of Vulva and Lower Extremities, ceasing on Catheterisation; Restoration of position of Uterus; Recovery.* (From notes taken by Mr. J. Poland, obstetric resident).—A. F——, aged twenty, had a child in April, 1878. In April, 1879, she ceased to menstruate. In October following, about a month before admission, she fell down on her face and abdomen, and was much shaken, and about a week after the abdomen increased. She had some medicine and got better, but about a fortnight before admission the abdomen again began to swell, and it remained enlarged at the time of admission. She had suffered from the uneasiness and tension, but within a few days the urine had been scantily passed.

On admission, the abdomen was distended as large as in the eighth month of pregnancy, but it was more tense, and the skin was shiny. The vulva and legs were œdematous. On examining per vaginam a firm swelling was found to the posterior part of the pelvis, the os uteri being close to the symphysis pubis. A catheter was passed, and 146 ounces of urine were drawn off, thereby removing the swelling above the pubes, but showing more plainly that in the pelvis, which rose somewhat, and was evidently the pregnant uterus. In ten hours, however, the bladder had enlarged again, and 120 ounces of urine were drawn off; four hours after seventy ounces; in three hours and a half, fifty ounces; and at the end of the twenty-fourth hour, forty ounces more, making altogether in the twenty-four hours over twenty-one pints, of which fourteen were actually secreted in the twenty-four hours. The woman was kept in bed, and shortly the œdema subsided. An air-ball pessary was placed in the vagina, and kept in position by a bandage and pad outside. She was kept prone as much as possible, and the uterus by the second day rose into the abdomen, and there continued. No further trouble occurred.

Dr. Hicks remarked that it was seldom, if ever, the distended bladder had been found so large, or producing such an effect, as in this case. He said that the history made the diagnosis easy, assisted by the catheter, which should in all cases of tumour of the lower abdomen be passed as a matter of routine. He cited a number of cases where the employment of this rule would have saved mistakes, for in these cases complete retention seldom occurs, and then a small quantity passing, it is not considered that any is retained. The passing of the catheter makes this matter clear. Dr. Hicks remarked that it is not always an easy matter for beginners to find the meatus urinarius, nor when found to get the instrument into the bladder. He had generally found the urethra drawn upwards, and so the meatus was behind the symphysis pubis, and he had found that when the point had entered the handle should be carried backward

close to the perineum as it was passed in; indeed, this movement generally caused it to pass into the bladder.

He also said that he had found the air-ball pessary sufficient to restore the uterus in such cases; it was gentler in its operation than any other, though sometimes the keeping the patient in bed, in the prone position, and keeping the bladder fairly empty for a few days, were generally sufficient. It was an interesting feature in this case that, with such severe distension of the bladder, no inflammatory symptoms followed; neither was there any decomposition of the urine, which was also healthy in all other respects. It formed a strong contrast with those cases of retention following labour, where, after twenty-four to forty-eight hours, extreme pungency of the urine takes place, with severe cystitis. In these probably the cystitis is the result of the bruising of the tissue of the bladder. Dr. Hicks said that he had not been able to detect any alternation in the tension of the bladder-wall when distended, such as occurs in the pregnant uterus, nor had he in other similar cases. As this was the only other organ which might have done so, he said that up to the present time the alternating contractions and relaxations of the uterus may be held diagnostic of distension of that organ.

CASE 2. *Retention of Urine from Pressure of a Descending Fibroid; Excessive Vomiting; Aphthous Mouth; Death.*—This case occurred in an Irishwoman, about forty years old, admitted into Mary ward extremely ill, with very quick pulse, high temperature, and excessive vomiting. The mouth was covered with aphthæ, and the body emaciated. There was a *hard* firm tumour above the symphysis, extending half-way to umbilicus, and subfluctuating. Per vaginam there was a large mass above, which so firmly filled the vagina that at first sight it appeared like a solid infiltration of the upper part of the canal; but after some trouble the finger was found to pass by the side of the mass, which ultimately proved a fibroid tumour, having a polypoid shape. Offensive grumous secretions escaped during the examination. The tumour above the symphysis seemed at first sight to be attached to the vaginal tumour, and to be firmly fixed in the pelvis. This appearance was increased by the unyielding nature of the abdominal swelling, which seemed of the same consistence as an ordinary fibroma of the uterus. But by following Dr. Hicks's invariable rule of passing a catheter, this tumour was found to be the distended bladder, from which was drawn about forty ounces of urine, upon which the swelling disappeared.

As the patient was too ill then to bear an attempt to remove the fibroma, attention was paid to lessening the irritation and removing the ichorous offensive discharge by antiseptic lotions. This treatment was, in a week, so far successful that the vomiting and irritative fever had ceased, and she was placed under chloroform for operation. As the vaginal tumour could not be removed *en masse*, it was attempted by écrasement, but the instrument was damaged before the whole growth was removed, and the rest had to be removed two days after. After these operations, however, either by the disturbance locally or by the anæsthetics, vomiting returned, collapse came on, and the woman died about the fifth day.

As no post-mortem examination was permitted, the exact cause of death could not be ascertained; but it was thought that not improbably some of the symptoms were owing to pressure on the ureters, which effect was not infrequently found to arise in similar cases. However, Dr. Hicks drew especial attention to the condition of the bladder, which was hard and firm, thereby presenting a strong contrast to the case above, and much more liable to deceive. In this instance this firmness did not intermit with any relaxation, nor was there any special symptoms of retention of urine.

WESTMINSTER HOSPITAL.

GANGRENE OF THE LUNG; RECOVERY.

(Under the care of Dr. STURGES.)

FOR the following notes we are indebted to Mr. Charles Hibbert, clinical assistant:—

Stephen M——, aged twenty-seven, a barman, was admitted into Burdett ward on the 7th October, 1879. He had rheumatic fever when a child, but no other illness previous to the one complained of. Five weeks before admission he had been much exposed, and caught cold, complaining of cough, pain in the left side of the chest, profuse expectoration, and dyspnœa. These symptoms became more marked, and the patient also complained that his breath and sputa were very offensive, and that the dyspnœa frequently came on in severe paroxysms.

He was very anæmic in appearance, and seemed very weak, having lost flesh considerably. His breath and sputa were of the characteristic odour of pulmonary gangrene; the fetor was so intolerable as to make it most difficult to approach him, and was noticeable throughout the ward. The sputa were frothy at the surface, but had a blackish-grey layer below, the sputa having the same odour as the breath. On percussion, there was a patch of dulness over the left base behind, about three inches square, and on auscultating over this patch crepitation of medium character was heard during inspiration and expiration. The other parts of the lungs gave evidence of bronchitis.

Dr. Sturges diagnosed the case as gangrene of the lung, and ordered the patient to be placed in a complete atmosphere of carbolic acid vapour. A tent was placed round the bed head, and vapour of carbolic acid was passed into the tent. The strength of the solution was one per cent. One drachm to half a pint of water was used for vapourising, and then gradually strengthened.

The patient was kept in this atmosphere for five weeks; for the first fourteen days the symptoms of cough and dyspnœa were no better, but the offensive odour of the expectoration disappeared; sputa still giving evidence of pulmonary breakdown. During the remaining three weeks of this treatment the symptoms gradually improved, and the patient became better and stronger, and increased in weight.

On November 12th he was examined, and it was found that the physical signs at the left base had much improved, the breathing being fairly healthy. The sputa were no longer black and offensive.

On the 20th the patient was discharged in fair health.

There was nothing to remark about the temperature; the diet was mainly milk, beef-tea, and light puddings; meat during convalescence. The carbolised vapour had evidently prevented the gangrene from spreading after the slough had been thrown off in the sputa; the lung gradually regained its normal character.

GENERAL INFIRMARY, HEREFORD.

SUB-ACUTE SPINAL PARALYSIS OF ADULTS (POLIOMYELITIS ANTERIOR).

(Under the care of Dr. BULL.)

FOR these notes we are indebted to Mr. Charles Devis, house surgeon:—

W. W——, aged thirty, a shepherd, married, father of two children, was admitted on Feb. 24th, 1879. The patient was a well-developed, healthy-looking man of sanguineous temperament, and possessed of more than average intelligence for the class to which he belonged. His family history was good, without evidence of nervous disease. He had himself always been strong and healthy until the present illness; temperate, not syphilitic, nor given to venereal excesses. He had lived fairly well, but had been much exposed to the weather.

On admission he had total loss of voluntary motion in the upper and lower limbs, back, neck, and abdomen, and impairment of the muscles acting on the lips. There was no paralysis of the bladder or sphincter ani. Reflex action, including the tendon reflexes, was entirely wanting. There were no muscular contractions, fibrillar or otherwise. The muscles were soft, flabby, and considerably diminished in volume, by comparison with a healthy subject of the same build. Sensation was everywhere perfect, the points of compasses being detected at normal distances with great precision. There were no paræsthesiæ of any kind; cold and heat sensations being correctly distinguished, and no constricting band or tendency to bedsore. There was decided defect in pronunciation of labials, but no difficulty in swallowing. The fundus oculi was healthy, but the pupils were rather sluggish. Electro-muscular contractility to both galvanic and faradic currents was entirely absent in both upper and lower limbs. Pressure, heat, and cold elicited no spinal tenderness. The urine was ammoniacal, containing copious catarrhal deposit. The bowels were variable; skin moist and warm. Temperature 99·2° F.

Of the onset of his illness the patient gave the following account:—Early in February last he was exposed to severe

cold and wet for twelve consecutive hours, getting very cold and numbed. On returning home he soon regained warmth, his feet feeling all right, but his hands were very stiff and numbed. He had no shivering or pain. On attempting to walk he found his left leg weak at the knee, and his calf a little painful. He slept well during the night, and on waking next morning he felt stiff and sore all over, not being able to move his limbs properly. He could walk across the room, but with much stiffness of the legs. He was unable to grasp anything firmly, or to button his clothes. He returned to bed, and whilst there found the stiffness and weakness increase, and by the same evening was unable to stand without support, his knees and hips bending beneath him. On the following morning he could not move his limbs in the least, and on the day after—the fourth from the day of exposure—he could not raise his head from the pillow, and lay quite helpless. At about the tenth day retention of urine occurred, and he lost control over his rectum, its contents escaping involuntarily. This last symptom only lasted two days, and the retention of urine a few days longer. The urine, which was drawn off by a catheter, was very thick and sticky, but no blood was ever passed. He never had any loss of sensation, nor any feeling of numbness, formication, &c. He had no pains in the limbs, and could always recognise the pressure of the bedclothes and of his book-rest. He had no cramps or spasms of the muscles, nor any trembling. He did not suffer at any time from headache or pain in the back. He stated that he felt quite warm throughout his illness, sweating profusely at times, but never feeling chilly. His secretions were always active. He had lost a great deal of flesh. His general health did not suffer in the least.

April 11th.—The patient was able to perform the following movements: arching of the spine between the shoulders and the hips, slight raising of the head from the pillow, drawing the legs up by acting from the abdomen on the pelvis, slight shrugging of the shoulders, and slight extension of the fingers; the improvement in muscular action being in the above order. Electro-contractility was reappearing in the forearms, but not in the lower limbs; the reaction being to galvanism, but not to faradism. A few days before he developed inflammatory conditions of the nail matrix on those fingers only that were exposed to the friction of the bedclothes—viz., the thumb, ring and little fingers of the right hand, and the ring and little fingers of the left hand. This condition came on before ergot, which was ordered, was given.

On the 19th, mobility in the forearm, muscles, and flexors of the elbow-joint had much improved, galvanic excitability in these having increased. The lower limbs showed no improvement. The toes were becoming much pointed, partly from the weight of the bedclothes.

On May 2nd there was great improvement in the upper limbs; extension of fingers being most rapidly advanced towards recovery; some signs of extension of toes and flexion of knee-joint. The reaction to galvanism was much greater in the upper limbs, slight in the thigh, and absent in the legs. Faradism produced a just perceptible contraction in the forearm extensors, and this only with the strongest current obtainable.

From this time until June 14th, when the patient left the infirmary, the limbs continued to improve slowly, the upper limbs by far the most, and on his discharge he was able to raise his hands above his head, though flexion and extension of the fingers were yet very imperfect. The improvement in the lower limbs was most marked in the flexion of the knee-joint. Reaction to galvanism still improving, to faradism still very slight, in forearms only.

As regards treatment, until April 10th the patient took iron and strychnine without apparently any effect. On that date the liquid extract of ergot in fifteen-minim doses was given three times a day, with belladonna in addition to the former drugs, the ergot being subsequently increased to twenty-five minims each dose on May 3rd, and thirty minims on May 13th; this dose being continued until June 14th without producing symptoms of ergotism. Active counter-irritation was employed along the spine with galvanism (thirty cells of Stohrer's battery), the current being passed from the nape of the neck to the sacrum, and from the sternum to the spine. Faradism was applied to the muscles.

The patient continued to progress uninterruptedly towards recovery, and had no abnormal sensations of any kind. On Jan. 7th, 1880, he was in good health, had gained in flesh, his muscles being larger and firmer than when he left the infirmary in June. He could walk a considerable distance with the aid of a stick in each hand, he was able to use his upper limbs well, and could write a fairly good hand, and was capable of a considerable amount of muscular resistance, the chief defect being in the muscles acting on the ankle joint and toes. There was still evidence that great wasting had existed. An electrical examination showed that the faradic irritability was still very low, especially in the lower limbs. A galvanic current of thirty cells only produced moderate contraction in the forearms and feeble contraction in the legs; in addition the anodal closure contraction was quite equal to that of the cathodal closure, AnSZ=KaSZ being the formula for the forearm muscles, and AnSz=KaSz that for the leg muscles. Reflex action of lower limbs was still very low; no tendo reflex (patellar and tendo Achillis) could be elicited. There was a slight tendency to talipes equinus from the contraction of the calf muscles, and there was also some hyper-extension of the knees when the patient was on his leg.

Remarks.—The diagnosis of sub-acute spinal paralysis rested on the marked absence of constitutional disturbance, of cerebral symptoms, of pain in the back, and of disturbances of sensation, all of which occur in the acute form of the disease, on the rapidly-increasing paralysis of almost all the muscles of the body, with their subsequent rapid atrophy, with loss of their electric excitability, and, further, the comparatively rapid recovery of muscular action accompanied by the increasing and qualitatively altered galvanic excitability, the reaction to faradism still remaining almost *nil*.

In two points the case much resembled the acute form of the disease—namely, in the very rapid though progressive onset of the paralysis, and in the disturbance of the bladder and rectum. An interesting feature of the case was the undoubted causal relation to the attack of severe exposure.

The completeness of the recovery was somewhat remarkable, as was also the absence of general disturbance in such a rapid onset of a profound alteration of nerve-tissue. Of the incontinence of fæces no mention of a similar condition seems to be made by the authorities.

Medical Societies.

PATHOLOGICAL SOCIETY OF LONDON.

Molluscum Contagiosum.—Elephantiasis.—Horny Growth.—Recent Division of Tendo Achillis.—Calcareous Tumour in Peritoneal Cavity.—Melanosis.—Old Excision of Knee.—Disease of Larynx in Congenital Syphilis.—Spinal Cord in Tetanus.

THE ordinary meeting of the Pathological Society was held on Tuesday, the 6th inst., J. Hutchinson, Esq., in the chair. Professor Ball of Paris was unanimously elected an ordinary member of the Society.

The first business of the meeting was the reading of a report of the Morbid Growths Committee on Dr. Abercrombie's specimen of Tumour of the Skull, by Mr. R. J. GODLEE, who, with Mr. Marcus Beck, had examined the specimen. The report showed that the tumour was a "round-cell sarcoma," growing from the deeper layers of the periosteum and dura mater, not from the bone.

Mr. STARTIN showed some drawings of a case of Molluscum Contagiosum, and of the microscopical appearances he had observed in it. A child, thirteen months old, was affected with the disease below the right eye; it had existed for two weeks when he first saw the case, and was apparently caught from her sister. An examination of the contents of the tumours showed them to consist of molluscous bodies, and clear highly refractile epidermic cells. A vertical section through one of the growths showed the same molluscous bodies in the centre, with vacuolation in some of the cells, hyperactivity of gland tissue, and abortive attempt at hypertrophy of gland elements. He considered these tumours glandular in origin, but developed from abortive rather than normal glands. They are always found where sebaceous glands

abound; the molluscous bodies are not seen outside the tumour; in structure, too, they are just like glands with the exception of the molluscous bodies, and all three layers of the epidermis can be seen in them. He thought they were most often met with in patients showing other signs of perverted nutrition.—Dr. THIN had advanced the view that these growths were glandular in nature, but arising independently of glands, at the Medico-Chirurgical Society, and was surprised Mr. Startin had spoken of it as if it were original with him. He did not, however, think the view of much value.—Dr. PYE-SMITH would be glad to learn what view the President held of these growths. Was it to be supposed that the tumours are all of sebaceous origin, for he had thought that there were two separate affections included in the term molluscum contagiosum? The first consisted of the glands distended with their own secretion as a result of obstruction of the ducts, while in the second there was a distinct new growth of glandular tissue without any evidence of retained secretion, the columnar cells having undergone molluscous degeneration. There were facts connected with treatment which also bore out this view.—The PRESIDENT remarked that the Germans, and lately Dr. Sangster in a very able paper, had taught that these growths originated from the rete Malpighii quite independently of pre-existing gland tissues. His own view was that they most probably always originated in the same way, for the cases were so closely alike, and he thought there was much to be said in favour of their originating from inactive abortive sebaceous glands. Dr. Sangster, who most strenuously denies this connexion with glands, thinks that the central opening in the growths is the aperture of a hair-follicle, and he thought that if so there was strong presumption in favour of their arising from the neighbouring sebaceous glands. Their close resemblance to glands in intimate structure was strong presumptive evidence of their origin from that source.—Dr. TAYLOR could not recognise the two forms of disease described by Dr. Pye-Smith as both molluscum; he thought most dermatologists would consider the first as sebaceous cysts, and only the second as really molluscum. He did not think the fact of a central orifice was of value in showing their origin from a gland, as he had seen as many as three, and even he thought four, orifices on one small tumour, and he had a microscopical specimen showing three openings, each communicating with its separate acinus, but apparently not separate follicles. The sebaceous glands were originally developed by an infolding of the rete Malpighii, and it was not difficult to imagine a similar process occurring in later life, and leading to the formation of these tumours.—Dr. PYE-SMITH had purposely avoided speaking of the origin of the growths; he was inclined to think both forms grew from pre-existing glands.—The PRESIDENT asked Dr. Pye-Smith whether he had ever seen the two forms he had mentioned occurring on the same patient.—Dr. PYE-SMITH had not seen them. He thought the yellow very contagious nodules often found on the scrotum the most typical example of one variety, and so-called molluscum verucosum of the other.—Mr. STARTIN stated that his view differed from Dr. Thin's, for he believed the growth began in an abortive inactive gland, while Dr. Thin held that it sprang from the rete Malpighii. In many cases he had been unable to find an opening in any part of the little tumours.

Dr. THIN showed photographs, illustrative of elephantiasis, for Dr. Henderson of Shanghai. One group showed the disease existing at the same time in three generations, the grandfather, son, and grandson. Other photographs illustrated the effects of treatment by the elastic bandage. The effect of pressure was to greatly modify the disease, but not to remove it. A photograph showed a complete and permanent cure in a man who had had the disease in both legs. In one leg the limb had become so painful and useless that it was amputated at the thigh through diseased tissue. The result was that the disease disappeared both from the stump of the amputated limb and from the other leg. This effect, Dr. Thin suggested, was due to diminished blood-pressure in the vascular system, consequent on the effect of the operation. Dr. Thin further showed sections and drawings illustrative of the minute anatomy of elephantiasis, the tissue examined being taken from a specimen of elephantiasis of the prepuce recently shown to the Society by the President. The structure was that of an immature fibrous tissue. The cells were distinguished by an unbroken contour and a single nucleus, there being nothing resembling a cell process, nor any appearance suggestive of cell division. They varied in size from that of a lymph corpuscle to the fully-developed cell, which was a typical, flat, endothelial cell of some size. The smaller cells were indistinguishable from lymph-corpuscles, and all gradations of growth to the larger forms were observed. The cells were in all stages distinct from the fibrous tissue, although they were found closely applied to the incompletely-formed bundles. The stellate cells, with dividing nuclei and appearances of proliferation, described by Rindfleisch and Hebra and Kaposi, were not found, Dr. Thin believing that such appearances were produced by unsuccessful hardening. The substantia propria of the tissue had not advanced to the stage of fully-formed bundles. Large masses of involuntary muscle were found distributed through the tissue. In the tissue, near the bloodvessels, the cells were found at places in layers, like endothelial layers. Dr. Thin compared the cells found in elephantiasis with those of normal fibrous tissue, and showed that they agreed in form with the connective-tissue cell, as it had been described by Key and Retzius, and by himself—namely, as an even-contoured, flat endothelium, without processes. The connective-tissue corpuscle of Virchow and Stricker he believed to be formed by the presence of the nucleus of an endothelial cell in the interstices of the tissue, that of Waldeyer and Ranvier by the endothelial cell, with more or less membranous substance adherent to the cell, although some of the cells figured by Ranvier were perfect endothelial cells.—Dr. CAVAFY thought the subject of the shape of the connective-tissue corpuscles of considerable interest. If Virchow's branched cells were really spaces, there was no doubt that in mucous membrane and in cornea the cells were branched. If flat cells were folded or pinched by bundles of fibrous tissue, they would exhibit the winged appearance observed by Ranvier. He regarded all connective tissue as a form of lymphatic tissue. All interfibrillar spaces are lined by flat endothelial cells, and where these cells are found abundant we have to do with an hypertrophy of these lymphatic spaces. Dr. Thin's flat cells were closely allied to endothelium. If the lymphatics were greatly hypertrophied in elephantiasis we should expect a development of muscular fibres in their walls. Had Dr. Thin found the plain muscle thus arranged.—The PRESIDENT observed that Sir J. Fayrer, on seeing the specimen when recent, had informed him that he would be sure to find a large amount of muscular tissue in it.—Dr. CAVAFY asked Dr. Thin if he had employed nitrate of silver as a staining agent in any of his preparations.—Dr. THIN, in reply, said that he did not believe that all the forms alluded to by Dr. Cavafy were found in connective tissue. The one form—the flat endothelium—was the cell; the others were compounds of the cell and other elements. The so-called branched cells of the cornea were not cells at all, but were simply spaces in the same sense as the connective-tissue corpuscles, described by Virchow in a transverse section of tendon, were spaces. He had preparations of the cornea, showing the existence in its substance of complete endothelial layers. In one, a mouse's cornea, he could focus three separate layers at different depths, and in addition there was on the anterior surface of the same cornea from which the epithelium had been removed, a complete delicate endothelium—the sub-epithelial endothelium which had been described in the intestine. In regard to the lymph-canalicular system, he thought the term an unhappy one and conducive of confusion. There were no canals in the sense of walled tubes, and there was not evidence to show that these spaces in the interstices of the tissues are in direct continuity with the lymphatic capillaries, which, as far as we yet know, formed a closed system of vessels in the same sense in which the bloodvessels form a closed system.

Mr. WALSHAM exhibited a Horny Growth, removed by his friend Dr. Marshall from the lower eyelid of an old lady aged eighty-seven. It had originated from a small wart or sebaceous cyst, and had been only two months growing. He brought it forward on account of its exceedingly rapid growth, and because there was no description of the microscopical characters of these growths to be found in the Transactions of the Society. He found the growth to be composed entirely of epidermic cells arranged in columns, which, when cut transversely, showed a concentric arrangement simulating "nests." He had been unable to determine exactly the origin of the growth, but thought it had sprung from a wart.

Mr. GODLEE showed drawings and described a case of

Melanosis of the Finger. The girl in whom it occurred was nine years of age, under Mr. C. Heath's care, to whom he was indebted for the specimen. Four years ago the last joint of one finger was noticed to be swollen, and a year later a black spot, the size of a pin's head, was seen in it. This grew a very little, and two years later several other similar very small spots appeared close round it. Mr. Heath amputated the finger, and Mr. Godlee expected to find the growths Melanotic Sarcomata, but he found that the black colouration was only on the epidermis. There was a trabecular arrangement of the deeper epidermis, and the spaces which became more flattened towards the surface contained a dark-red material which was probably altered blood, for on tearing it out he had been able to see blood-corpuscles and altered epidermic cells. The deeper epidermic cells contained brown pigment and oily matter. He had never met with a similar growth, and was at a loss to know in what category of new growths to place it.

Dr. BARLOW showed a Larynx removed from a child eleven months old, the subject of congenital syphilis. When five months old the voice was noticed to be rather weak and hoarse, especially when she cried; there was also a hoarse cough, but no sign of laryngeal dyspnœa. These symptoms varied a good deal, at times passing away entirely and relapsing, probably from catarrh. The child eventually died suddenly after three or four days' illness, apparently connected with the larynx. At the post-mortem examination there was found to be some œdema of the aryteno-epiglottidean folds, very slight erosion of the mucous membrane above and below the vocal cords, and in the ventricles, and some very scanty, thin, and closely-adherent laminæ of false membrane. The cause of death appeared to be the supervention of membranous inflammation upon a chronic laryngitis. He was induced to bring the case forward because Dr. Sémon had recently stated that disease of the larynx in congenital syphilis was very rare. In his experience he had found it of quite common occurrence that syphilitic children, when first brought for treatment with snuffles, thrush, and so on, had also a hoarse, weak voice; but as this rapidly improved under mercurial treatment but little attention was paid to it. In several cases he had noticed that after apparent recovery any fresh catarrh at once affected the larynx, as if a subacute condition were left, which was prone to take on acute change. His colleague, Dr. Warner, had shown him a case of true warty growths in a syphilitic child.—Dr. ALLEN STURGE showed the Larynx of a boy two years and a half old, who came to him suffering from intense inspiratory and expiratory dyspnœa, stridor, and cyanosis; the voice was reduced to a harsh whisper. He had evident signs of congenital syphilis inherited from his father, who had laryngitis severely during the second stage of the disease. The boy improved under treatment by mercurial inunction, but died suddenly while being brought to the hospital. The mucous membrane of the left half of the glottis was much swollen quite down to the rima glottidis; there had been extensive ulceration, which had destroyed both the true and false vocal cords, particularly on the left side, and by cicatrisation had left symmetrical deep fissures and commencing stenosis of the upper part of the trachea.—Dr. LEES was able to confirm Dr. Barlow's statement as to the frequency of affections of the larynx in the course of congenital syphilis. He remembered three cases in which the affection was evidently severe: in one he had been able to see that the epiglottis was thickened and ulcerated; another case had been admitted to the hospital three or four times with urgent dyspnœa, for which it was feared tracheotomy would be required, but the symptoms were relieved each time by mercurials; any catarrh brought them back. This child's sister suffered in the same way till she was two years old, when she died from measles.—Dr. SÉMON had been misunderstood by Dr. Barlow, for he had only stated that in congenital syphilis deeper lesions were rare; superficial catarrh was, no doubt, common enough. Not only were the records of the deep lesions very few, but it was a noteworthy fact that in cases of congenital syphilis with signs of destruction of the nose or palate, only very few examples of destructive disease of the larynx had been found, he himself had never seen any.—Dr. BARLOW mentioned that Dr. Bumstead had observed six cases of very deep ulceration. On the invitation of the President, Dr. John Mackenzie (America), who had specially studied this question, stated that in all he had collected 78 or 80 cases of marked congenital syphilitic disease of the larynx, which he hoped shortly to publish. He thought the affection was as common in congenital as in acquired syphilis; twenty years ago examples of the latter were looked upon as pathological curiosities, as those of the former are now. Many cases were overlooked from neglecting to use the laryngoscope, and because they fell under the notice of the general practitioner rather than the throat specialist.

Mr. ALBAN DORAN and Dr. VINCENT HARRIS showed several microscopical specimens of a Spinal Cord from a fatal case of Tetanus occurring after Ovariotomy, in which the disease had apparently arisen from a cold draught. The tetanic symptoms were well marked, and caused death from asphyxia. The stump of the pedicle was found to be in every way healthy. After careful examination they had failed to find disintegration of the grey cornua described by Lockhart Clarke, but they had found one or two of the isolated transparent unstained patches described by Dickinson, Coates, and others. These patches were also seen in another cord from a case of tetanus that they had examined. In addition, they had noted proliferation of the small neuroglia nuclei beneath the epithelium of the central canal in the lumbar region; in the cervical region a band of exudation was seen passing quite across this canal, and there were evident signs of exudation in the cervico-dorsal region. They had not found a shrinking of the stellate cells of the grey matter.

The following card specimens were exhibited:—1. Recent Division of Tendo Achillis; by Mr. S. G. Shattock. 2. Calcareous Tumour in Peritoneal Cavity; by Mr. Eve. 3. Specimen of Excision of Knee twelve years ago by Sir W. Fergusson; by Dr. Lediard.

The Society then adjourned.

MEDICAL SOCIETY OF LONDON.

Nutritive Enemata in Gastric Disease.—Arsenic in Skin Diseases.

AT the meeting of this Society on the 5th inst.—Mr. F. J. Gant, President, in the chair—a paper was read by Dr. THEODORE WILLIAMS upon two cases of Gastric Disease treated successfully by nutritive injections. The first was that of a widow aged twenty-eight, cook by occupation, suffering from symptoms of ulcer of the stomach of some months' standing—hæmatemesis, pain after swallowing food and even cold water, and persistent vomiting. She was extremely anæmic, and had a well-defined area of tenderness on deep pressure in the left hypochondrium. The amount of blood vomited had never been large, recently it was in the form of clots. Various drugs were tried during her attendance as an out-patient at the Brompton Hospital, and a liquid diet enjoined; but the symptoms persisting, she was admitted into the hospital, kept in bed, and fed only by enemata of beef-tea, eggs, and brandy, given twice daily. In the course of sixteen days the vomiting, pain, and localised tenderness disappeared, and she was allowed some solid food by the mouth. This, however, causing symptoms of indigestion, a return was made to the injection treatment for two days. She was discharged cured three weeks later. The second was a case of hysterical vomiting in a young woman aged twenty-two, suffering from chronic phthisis. Here vomiting after food came on and persisted in spite of various alterations in diet and the use of different drugs. Nutrient injections without stimulant were used for eleven days, and then gradually omitted, and in this case also a return to this mode of feeding was rendered necessary for a short time before the case was completed. Dr. Williams urged the advantages of physiological rest in the treatment of gastric affections, as of diseases of other organs; especially as the rectum proves in many cases quite sufficient to nourish the body temporarily.—Dr. DAY remarked upon the difficulty of diagnosis in some cases of persistent vomiting. He mentioned several in which he had obtained good results from the use of nutritive enemata, and considered this treatment especially valuable in the obstinate vomiting of ovarian disease. He recommended that the injection should be small in quantity, consisting of a tablespoonful of port wine, two tablespoonfuls of beef-tea, with five drops of laudanum if required.—Dr. DE H. HALL advocated the use of enemata not exceeding six or eight ounces, combined with pepsine and dilute hydrochloric acid. He advised the use of such injections in advanced laryngeal disease, and mentioned a

case of syphilitic disease of the larynx with almost complete stenosis, recently under his care at the Westminster Hospital. When admitted, the patient was extremely emaciated, having been unable to swallow for some time. Iodide of potassium in large doses, ice to suck and nutritive enemata, were ordered, and in a fortnight of this treatment the patient had gained weight, and was able to breathe freely and swallow well. He suggested similar treatment in the advanced stages of laryngeal disease.—Dr. ROUTH pointed out that pain in the left side was frequent in anæmic women, and in these cases the hæmorrhage came from the liver. In one case he diagnosed gastric ulcer from the severe local pain produced by the interrupted current at one spot in the epigastrium. He recommended the use of raw beef-juice every four hours in quantities varying from four to ten ounces, and advised the use of water enemata on alternate days for the purpose of cleaning out the bowel. The white of egg was a good addition; and wine was preferable to brandy.—Dr. DEWAR found the alkaline treatment, with the use of Carlsbad salts, most efficient in gastric ulcer.—Dr. STEVENS mentioned a case where the use of setons had succeeded in the cure of obstinate vomiting.—Dr. ROGERS had tried moxa in these cases with good results.—Dr. FOTHERGILL pointed out the difficulty in diagnosing actual disease of the stomach from reflex disorders due to pelvic irritation. The latter were not uncommon in young females, who complained, in addition to the gastric symptoms, of headache and a feeling of heat in the vagina. He reminded the Society of Dr. W. Robert's method, and stated that he himself had not found it necessary to resort to nutritive enemata for the cure of gastric ulcer.—Dr. GILBART SMITH had at present under his care at the London Hospital a young unmarried woman, who for twelve months had suffered from obstinate vomiting and gastric pain. The usual remedies having failed, a vaginal examination revealed ulceration of the cervix uteri. This was treated in the ordinary way, and the vomiting ceased. Another similar case, with a like result, was still under his care.—Dr. WILLIAMS, in reply, thought that two injections per diem of large quantities were better than small ones given more frequently. He had used this plan of treatment in laryngeal phthisis with great benefit. The use of blisters, moxa, and setons no doubt did good, but they were less efficacious than the treatment he advocated.

Mr. MALCOLM MORRIS read a paper on the "History and Therapeutical Value of Arsenic in Skin Diseases." It was first brought before the profession by Dr. Girdlestone, of Yarmouth, in 1806, and was at once recognised as a valuable remedy in England. Biett introduced it from the English hospitals to that of St. Louis, in Paris, and, following him, the French physicians, especially Cazenave, have been among the first to advocate its use and examine its action. In Germany, however, it has not been so well received, and even at the present time Hebra uses it but slightly. Among English physicians Hunt is the most representative of those who used it very largely and in every disease, and Erasmus Wilson, who believes it to be a valuable remedy, but not to the same extent. Its physiological effects have been examined by Claude Bernard, Lolliot, Sée, and Dr. Ringer. They were described according to the action of arsenic on nutrition, respiration, circulation, and the nervous system, and its elimination by the skin, mucous membranes, liver, and kidneys. The increase of appetite is due rather to diminished oxidation than to any direct action on the intestinal mucous membrane. This diminished oxidation is caused by the fact that arsenic has the power, to a great extent, of taking the place of oxygen in the coloured blood corpuscles, and so prevents the blood from receiving its usual amount of oxygen in the lungs. Its action on respiration is also due to its action on the blood—for diminished oxidation means greater freedom of the respiratory movements, and decrease of oxygen in the blood means a greater stimulation of the respiratory centre. Its action on the circulation and the nervous system is more obscure, but in the former there is a marked fall in the blood pressure. That arsenic is eliminated by the liver, kidneys, and mucous membranes is proved by its discovery in the bile and urine, and by its causing bronchitis, conjunctivitis, and diarrhœa. That it is eliminated by the skin has also been proved by its discovery in the serum of a blister and in the sweat; and its special action in large doses on the epidermic cells has been examined by Miss Nunn and Dr. Ringer. Psoriasis is the disease of all others in which arsenic has been most universally used, and its action in many cases is undoubted, though not in all. The author believes this due to the action it exerts on the blood by diminishing not only the oxidation in the tissues, but by absolutely diminishing the number of coloured corpuscles. He had also used it with advantage in lichen planus, pemphigus, and chronic urticaria; but it must not be thought by any means a universal cure for all skin diseases. As some individuals have an intolerance of arsenic, various preparations should be tried before it is abandoned, and it is sometimes useful to combine it with other drugs, even iron. It should always be taken during or after food; should never be pushed to produce the slightest constitutional symptom, and should be continued, to prevent relapses, for a length of time after all traces of the disease have disappeared.

ASSOCIATION OF SURGEONS PRACTISING DENTAL SURGERY.

AT the meeting on March 17th (W. A. N. Cattlin, F.R.C.S., President, in the chair) Mr. FRANCIS FOX read a paper on "Irregularities of the Teeth, and their Surgical Treatment." The early decay of teeth which marks the present generation is due, the author thought, to mal-nutrition occurring in the earlier periods of life. At about seven months after birth a process of absorption is set up in the walls of the crypt and parts superimposed, and by this process the crowns of the temporary teeth become visible above the surface of the gums. When the crowns of the teeth have erupted this absorptive action for a time ceases, and a renewal of the developmental process ensues, by which the alveoli are built up around the fangs of the teeth. At about four years of age the temporary dentition is perfected, and soon after this perfection is reached absorption again sets in, commencing now in the fangs of the teeth, and these, together with their alveolar processes, are gradually removed, their permanent successors replacing them by a similar process of absorption of crypt and development of alveolar structures. The important point to bear in mind is the fact that the alveolar portion of the jaws is developed with each dentition, so that a previous alveolar structure can have little to do with the position of the succeeding teeth, except as it may present an obstacle to their onward progress in consequence of its non-absorption. As to the development of the jaw bones, Mr. Fox remarked that these bones consist of two portions, (1) an alveolar structure, developed with the temporary teeth, absorbed with them, and again redeveloped with the permanent teeth, and (2) a basal portion. This base is more prominently marked in the lower jaw, in which the inferior dental canal very emphatically indicates the junction between the two portions of the bone. The base of the jaw when once formed remains in pretty much the same condition throughout life, except in advanced old age when the muscles of mastication are no longer in full use, and then in a slight degree it becomes wasted. In the superior maxillæ at birth the alveolar processes descend but little below the level of the palatal plates, and the anterior and posterior parts are but little developed. As age advances the alveoli lengthen, the tuberosities increase in size, and an active development of bone takes place in these situations. The tuberosities are to the upper maxillæ what the coronoid processes are to the lower jaw. From these points the alveolar line is lengthened. In the lower jaw an alteration in the position of its articular surfaces and ascending rami, together with an absorption of the coronoid processes, accompanies the development of the posterior permanent teeth. The jaw elongates by additions to its posterior cornua. The capacity of the jaws in childhood is nearly equal to the anterior portions of the adult bones; for the ten anterior teeth of the permanent set in each jaw replace the temporary, and occupy the same position as these, so that this part of the jaw in adult life is pretty much the same as in childhood. If contracted then it will remain so throughout life, and no subsequent development in the posterior regions will tend to expand it. The replacement of the temporary teeth by their successors is effected by a purely physiological process, and is absolutely independent of pressure. There seems to be a physiological

law by which the cells composing the absorbent papilla in the neighbourhood of a developing tissue have the power of absorbing a mature structure. That pressure has nothing to do with the process may be proved by the fact, that in cases in which the shedding of the first teeth has taken place prematurely, a layer of bone has often been observed to intervene between the crown of the advancing tooth and the base of the socket of its predecessor. At the time when the temporary teeth are about to be shed, in the well-developed jaw a decided separation between contiguous teeth is noticeable: and this circumstance is a fair indication of a future regularity in the succeeding dentition, and a proof that this portion of the jaw has already been prepared to receive the larger permanent teeth. If the process of absorption continues uninterruptedly, the fangs of the temporary teeth will be gradually removed, leaving little more than the shells of the crowns, which readily drop from the gum as their successors are in turn ready to occupy their places. But should any arrest in this process occur (and such is far from an uncommon circumstance), these temporarary organs are liable to offer very considerable obstacles to the regular advance of their permanent successors. The causes of irregularity in the position of the teeth may arise during the developmental periods of life, and are then due to a want of proportion in the size of the teeth and jaws, or to a faulty development of the jaw bones; or the displacement may depend upon some accidental circumstances arising subsequently, such as the prolonged retention of the temporary teeth, the presence of supernumerary teeth, the habit of "thumb-sucking," or the undue pressure from an hypertrophied tongue. There is abundant evidence to prove how frequently such deformity depends upon hereditary influences. The conditions of life to which our race has for so many generations been subjected seems to have lessened the necessity for the broad and well-formed jaws which were so characteristic of our ancestors, and for many years the advances in civilisation have been marked by a deterioration in the capacity of our jaw-bones. Mr. Coleman, in some interesting investigations made several years ago, found that the percentage of contracted jaws was immeasurably greater in the children of the well-bred population than in those of less refined cultivation. The prolonged retention of temporary teeth is frequently associated with irregularity in their successors, and is probably often the cause of such irregularity. The presence of supernumerary teeth in the dental arch may prevent the normal members from assuming their proper places; but doubtless a disproportion of size between the teeth and jaws is of all causes of irregularity the most common. This disparity leads to a crowding of the teeth, sometimes to such an extent as to altogether prevent the eruption of some one or more of the dental series, such remaining impacted in the substance of the jaws. Certain injuries in early life may occasion displacement of the teeth, especially in the lower maxilla, such as the contraction of cicatrices about the face and neck. Mr. Salter, in his work on Dental Pathology and Surgery, treats the subject of irregularity of the teeth under two heads—(*a*) simple irregularity in which the misplacement is confined to one jaw, and is independent of the position of the teeth in the opposite jaw; (*b*) compound irregularity, which depends upon the position of the teeth in the opposing jaw. In "simple irregularity"—that is, where the misplacement is confined to one jaw, the crown only of the tooth may be irregularly placed, the apex of the root retaining its normal position; or the entire tooth may be displaced, or faulty in its development. Such irregular teeth are often entirely removed from the dental arch, and may be impacted in the substance of the jaw-bones. In the former condition, when the apex of the root retains its normal position, much good may be effected by judicious treatment, but in the latter case little can be done to remedy the evil, except by the removal of the displaced tooth. As examples of "simple irregularity," we may mention the appearance of the upper canines above the alveolar ridge, or in the palate, owing to insufficient room for them in the dental arch. An early loss of their temporary predecessors, by permitting the first bicuspid and the lateral incisor to approach each other, is not infrequently the immediate cause of this displacement. Sometimes, however, the retention of the temporary canine, or the presence of a supernumerary tooth, will occasion its deformity. An overlapping of the incisors is another form of "simple irregularity," and frequently requires for its treatment a resort to some mechanical appliance in order to obtain regularity in the position of these teeth. Another not uncommon form of irregularity is where an incisor tooth is more or less twisted, sometimes to such a degree that the side of the crown will occupy the position of its anterior surface. A forcible twisting of the tooth into its right position is very generally adopted. Some, however, are averse to this prompt treatment, and suggest the employment of a plate carefully adjusted to the palate, and having certain properly-constructed points of resistance. An unsightly separation of the central incisors in the upper jaw sometimes occurs, and the teeth may be readily drawn together, but have a great tendency to return to their former position. In treating these cases great care should be taken to prevent the ligature from slipping below the edge of the gum—between the necks of the teeth and the gum,—for the irritation set up by such a mishap has been known to cause the death of the tooth. In order to prevent this displacement of the ligature, a small vulcanite plate may be constructed to which the ligature can be attached, and thus prevented from shifting its position. The second form of irregularity of the teeth—that depending upon the position of the teeth in the opposing jaw—is much more complicated. As an example might be cited the "underhung jaw," in which the "bite" is intersecting; some or all of the six front upper teeth being shut behind the corresponding teeth in the lower jaw. This condition, in its extreme extent, arises from an undue development of the lower over the upper jaw, or from a want of development in the superior maxillary bones. It may also arise from a retardation in the eruption of the superior incisors, or by these teeth being pushed inwards by the prolonged occupation of the dental arch by their temporary predecessors. An early treatment of this irregularity is all-important, and should consist in preventing the contact of the opposing teeth. An opposite condition of the lower jaw sometimes occurs, in which the lower incisor teeth bite close up to the palate, so that they press against the necks of the upper teeth, and push them forward. A separation of the teeth in the anterior portions of the jaws has been described, and is occasioned by a congenital malformation of the lower jaw. The early obliquity in the position of the ascending rami is unduly maintained, and there is a want of development in the alveolar portions of the jaws, especially in the regions of the molar teeth. This irregularity may be caused by the contraction of a cicatrix in the throat or neck. The bicuspid teeth are not infrequently misplaced, and, when so, they usually occupy a too inward position. This may arise solely from their having been prevented from assuming their proper position in the dental arch by the prolonged retention of the temporary molars. But usually it is dependent upon a diminished capacity of the jaw, and in the upper jaw is generally associated with a projection of the incisors, and a more or less elevation of the palate constituting the V-shaped jaw, or "rabbit-mouth." This malformation is congenital, but, except in very exaggerated cases, is not very manifest until the posterior permanent teeth are about to be erupted, when the additions to the superior maxilla have been made in the posterior regions. The newly-formed bone, which has been gradually developing, is now found to be placed at an angle with the pre-existing alveolar line. This abnormal development has arisen in order to effect an harmonious arrangement with the other bones of the cranium. The maxillary bones having been imperfectly developed during early childhood, their posterior borders not being sufficiently divergent, the subsequent additions for adult conformation are placed in a wider circle; hence the point of junction between the two parts (the old and the new, so to speak) is marked by an angle of more or less extent. It is usually associated with great delicacy of constitution, and may occur in those of weak mental powers, but is often observed in persons of great intellectual capacity. The treatment of these cases consists in endeavouring to gain increased space in the dental arch, and to diminish the projection of the upper front teeth; but is, as a rule, more or less unsatisfactory. Irregularity in the wisdom teeth is sometimes met with, and may occasion most serious mischief, when extraction is the remedy. Transposition of the teeth is rare, and is usually met with anteriorly; and also inversion, which is still rarer.

A discussion ensued, in which the President, Mr. E. Bartlett, Mr. Gaine, Mr. Parson, and others took part. The President then announced that at the next meeting, on April 21st, Mr. Christopher Heath would read a paper on "Thirty-five Years' History of a Maxillary Tumour."

Reviews and Notices of Books.

A Treatise on Hygiene and Public Health. Edited by ALBERT H. BUCK, M.D., American Editor of "Ziemssen's Cyclopædia of the Practice of Medicine," Instructor in Otology in the College of Physicians and Surgeons of New York. Two vols. large 8vo; pp. 792 and 657. New York: Wm. Wood and Co. London: Sampson Low, Marston, and Co. [FIRST NOTICE.]

IN a prefatory note to this work Dr. Buck tells us that in the preparation of the scheme announcing a translation of "Ziemssen's Cyclopædia of the Practice of Medicine" (to use the title given to the American translation), it was thought advisable to omit the first volume of the series, that which relates to the subject of health. This section of the work, treating the subject almost entirely from a German standpoint, failed to satisfy the materially different requirements which existed in the United States. It was determined, therefore, to substitute for the volume belonging to the original series of the Cyclopædia the present treatise written with special reference to the different characters and conditions of soil, habitations, modes of life, and laws of the United States. This judgment was a sound one, and we owe to it the independent treatise now before us. It would be more accurate to say series of treatises, for such the work really is, and it has the additional interest of being entirely written by American writers. Although written, as already mentioned, with a special view to the public-health requirements, legal and other, of the United States, this in no sense detracts from its general interest. The work makes no pretence of treating in other than the broadest sense of the sanitary laws of the United States. The want of uniformity in such of the various States as have legislated on sanitary matters would forbid this. Moreover, so far as the work deals with different conditions of climate, soil, and habitations and special modes of life, this is mainly in illustration of general principles. Hence the book is only in a very limited sense restricted to the peculiar requirements of the United States, and the statement of the prefatory note is somewhat misleading in this respect. Indeed, we are inclined to think that readers of the book on this side of the Atlantic will be disappointed to find that American experience has contributed so little to the whole. But be this as it may, the work is, in reality, a general treatise on the subjects to which it relates, and it is executed with a general uniformity of excellence not always found in works which are the results of the labours of many writers. We may say, indeed, at the outset that the work takes at once a leading place among text-books on hygiene and public health, and that it should become a necessary part of sanitary workers' and sanitary students' libraries. In the latter regard it may be especially noted that subjects are included not usually (if we mistake not, never) found in English text-books; for example, the hygiene of the naval and merchant marine, of coal mines, of metal mines, syphilis, schools, quarantine (both maritime and inland), &c.

We have already said that the work is more accurately described as consisting of a series of treatises, written, as a rule, by different authors. We propose briefly to glance at the several treatises, adding such occasional comments as the limit of our space will admit of.

The first volume opens with an "introduction," and is divided into two parts, relating respectively to "individual hygiene" and to "habitations." The introduction is devoted to a general examination of the causes of disease and the jurisprudence of hygiene, and it is simply necessary to state that it is the work of Dr. John S. Billings to give our readers to know that it is an admirable bit of work. It is especially noteworthy for the clear and thoughtful mode in which some of the most advanced and recondite questions of intimate pathology are treated. The part on individual hygiene is divided into five sections—to wit, infant hygiene (Professor Jacobi, M.D., New York); food and drink (Professor James Tyson, M.D., Pennsylvania); drinking water, and public water supplies (Professor William Ripley Nicholls, Boston, Mass.); physical exercise (Dr. Brayton Hall, New York); and the care of the person (Dr. Arthur van Harlingen, Philadelphia). The several articles are excellent, forming important contributions to our knowledge of the subjects to which they relate. The one on infant hygiene, by Professor Jacobi, is of peculiar value, especially as it concerns infant feeding. Here the author gives us the result of an exceptional experience on the subject which will be novel to most English readers, and which is in the highest degree suggestive. The article on physical exercise is a very able one, and of considerable interest. The other articles rest largely upon data common to Europe and the United States, but their mode of treatment gives a freshness to them which will be highly appreciated here. The second part of the volume, relating to habitations, is divided into three sections—to wit, soil and water (Dr. W. H. Ford, President of the Board of Health, Philadelphia); the atmosphere (Dr. D. F. Lincoln, Boston, Mass.); the general principles of hospital construction (Dr. Francis H. Brown, Boston, Mass.). Dr. Ford's article is a very comprehensive one, including the pollution of the soil in relation to defilement of the air and the drinking-water, and the whole subject of excrement removal. American experience appears to add little to European experience on this important subject, and the impression is left on the mind that the States lag much behind England in readiness of adaptation to particular local exigencies. Or rather it would appear as if the results of English experience on this subject were not as fully apprehended as they might be. Apart, however, from this consideration, the article is of peculiar excellence. Of the articles on the atmosphere and on hospital construction it may be said generally that they are welcome additions to the literature of the subjects.

We reserve our remarks on the second volume for another occasion.

Du Cancroïde des Lèvres et de son Traitement. Par le Dr. ALBERT PEILLON, Chef de Clinique Chirurgicale à la Faculté de Médecine de Lyon. J. B. Baillière et Fils, 1880.

ALTHOUGH we fail to find any new matter in the chapters on the etiology, pathology, symptoms and cause of this common cancerous affection, Dr. Peillon has certainly succeeded in stating well and concisely all the more important facts about the disease. He deals more fully with the subject of treatment, and dismisses as worthless, sometimes harmful, and at the best only palliative, the many external applications that have from time to time been vaunted as specifics for epithelioma. He especially discusses the value of chlorate of potash, and states that its internal administration is certainly useless, but that when applied externally it has in some cases been followed by cure, and should be used where operation is out of the question. He describes clearly and well several useful ways of removing epitheliomata of the lips, and especially describes an operation just introduced by M. Desgrorges of Lyons, and called cheiloplasty. If a large part or the whole of the lower lip be removed by a V-shaped incision, and the flaps brought together along the middle line, it is obvious that the upper lip will be pouted forwards and the buccal orifice much deformed. Desgrorges remedies this by removing a triangular piece from each end of the upper lip; he first widens the orifice by an incision outwards on each side, and the removal of the flaps shorten the lip sufficiently to restore the

appearance of the mouth very fairly. We should certainly be inclined to try this method of operating in suitable cases.

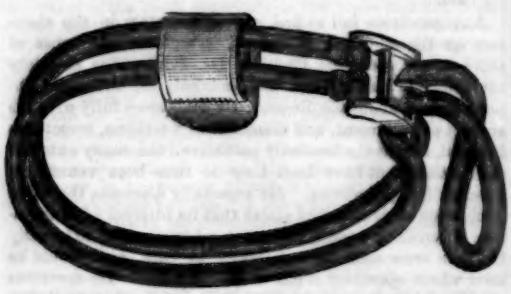
Harvey: La Circulation du Sang; des Mouvements du Cœur chez l'Homme et chez les Animaux. Traduction Française. Par Charles Richet. Paris: G. Masson. 1879.

Englishmen ought to be grateful to M. Richet for being the first to render into his native language the masterpiece of Harvey. It is strange that two centuries and a half have been allowed to elapse before our neighbours should have thought it necessary to have Harvey's writings in a more accessible form than the original Latin version. We congratulate M. Richet on his praiseworthy and successful effort, the value of which is considerably enhanced by the introductory chapter, in which he reviews the theories of the circulation among the ancients and the immediate predecessors of Harvey. He shows how the work of Fabricius, Servetus, and Cæsalpinus had raised the perception of the truth, but it was Harvey, and he alone, who demonstrated it by experiment and formularised a theory which had already been floating in the minds of a few learned men. M. Richet further concisely sums up the directions in which knowledge upon the subject has been advanced since Harvey's day, and he has added to the value of his book by appending some notes upon the mechanism of the circulation interpreted by the light of modern physiology. Altogether the book is worthy of as wide a perusal in England as we hope it may gain in France.

NEW TOURNIQUETS.

We have probably to thank the Ambulance movement for much of the ingenuity that has lately been exhibited in inventing simple apparatus for encountering surgical emergencies. Among the latest results of the movement are two new tourniquets, one on the plan of the india-rubber band, and the other a modification of Petit's well-known instrument.

The india-rubber tourniquet is the invention of Dr. Ward Cousins of Southsea, and is of very simple mechanism and construction. It consists of a movable pad, strong elastic tubing, and a special buckle, and it can be very rapidly adjusted to a limb so as to completely control the circulation. The buckle can also be easily opened and shut, and the



rubber tubing tightened or relaxed *with one hand*. The tourniquet, at once simple and powerful, is suitable to all surgical operations in which such an instrument is required. It will be found particularly serviceable to surgeons in the country, who are liable to be called upon to operate with very limited assistance. In amputating a limb for example, the tourniquet can be opened with the left hand, and a bleeding vessel seized with the forceps by the right; it can then be instantly closed again, and the vessel secured by torsion or ligature. In many accidents attended with bleeding it will be generally useful, inasmuch as it may be applied efficiently even by unskilled persons. We would suggest that a stitch or button in the leather between the two pieces of tubing as they pass over the pad, so as to keep them apart, would add to the safety and utility of the instrument.

The other tourniquet is by Mr. M'Clure, and seems, as already hinted, to be a cheap and simple modification of Petit's instrument. The materials in both are similar, but Mr. M'Clure has substituted for the handle in Petit's tourniquet a large wheel, within which the strong screw works.

The instruments are applied in a similar way, but in the new one a hard wooden pad is attached to the screw, and is powerfully acted upon by a very small action of the wheel. We must, however, point out that in the specimen submitted to us the webbing is too narrow and the pad too small, thereby involving a liability to rolling of the pad on any movement of the limb to which the instrument may be applied.

PUBLIC HEALTH AND THE SOCIETY OF ARTS.

In consequence of the general election, it has been considered advisable to fix the date for the Conference on this subject—which has been held annually by the Society of Arts since 1876—somewhat later than was originally intended, or than has been the case in former years. It will, therefore, be held in the beginning of June. As at the previous Conferences, the Right Hon. James Stansfeld, M.P., late President of the Local Government Board, will be in the chair.

A programme of subjects for discussion has been drawn up by the Executive Committee, and will be submitted to the Conference. The following are the subjects included:—1. The development of Local Government administration, especially by the constitution of County Boards. 2. The extension of the powers of the local authorities of urban and rural sanitary districts. Amendments in the Public Health Act. 3. Sanitary inspection and classification of dwellings. 4. Amendments in the Rivers Pollution Prevention Act. 5. The advisability of strengthening the administrative organisation of the Local Government Board. Local Government Board Administration Areas. 6. Further suggestions by sanitary authorities.

It is announced that the detailed programme will be issued shortly, and that copies can be obtained, when ready, from the Secretary of the Society of Arts, by any person who applies. The programme will also be issued to sanitary authorities throughout the kingdom.

It is not proposed to make any attempt to procure papers which may be read and discussed; but the Committee state that they will be glad to receive any communications containing fresh information, or giving accounts of progress made since the last Conference. Such communications, if approved by the Committee, will be printed and circulated at the Conference, but it is probable that time will not admit of any discussion being taken upon them.

Steevens's Hospital, Dublin.—At the termination of the Winter Session, 1879–80, the following honours were awarded:—Gold Medals: Senior Class, William J. Trotter; Middle Class, William J. Cuthbert; Junior Class, Glascott H. Symes. Honorary Certificates: Messrs. Blackham, Carroll, Clarke, Cruise, Smith, and Wells.

THE LANCET.

LONDON: SATURDAY, APRIL 10, 1880.

THE political crisis through which we are passing will offer a rare and instant opportunity for reform, with which the incoming Premier may illustrate his administrative capacity, sweep from his path many difficulties, and at the outset of his career establish a strong claim to confidence, while he confers on his country a general boon. The weak point in the English system of government as at present constituted, is the isolation of the department which *theoretically* gathers up the reins of local self-government and places them in the hands of the Ministry, but which *practically* not only fails to perform that necessary function, but entangles the ribbons and frets the team. During the last twenty years there has been a fitful and irregular, but, on the whole, continuous and rapid growth of the principle of local self-government, and, strange to say, successive Ministries have been bewildered and embarrassed rather than helped by the circumstance. Instead of looking closely into the phenomenon, accepting it as inevitable, and converting it into a new source of political strength, statesmen have been scared. They have, indeed, made a show of accepting the increased responsibilities thrust upon them, but the action taken has generally appeared to the country, if it has not been in fact, a clumsy piece of centralisation; and while with timid hand they have added to the confusion and trouble at Whitehall, they have been compelled by pressure or moved by fear to throw some new sop or placebo to the local authorities. This position of affairs cannot be much longer tolerated. It is a source of daily increasing dissatisfaction to the country, and the policy of concession to local demands which it necessitates is undignified, and in the end must be ineffectual.

It is easy to cut the Gordian knot of this difficulty, and to render the process of reconstruction facile by the simple and timely precaution of *placing a strong and wise man at the head of the Local Government Board, and making him a member of the Cabinet.* There is no lack of good men at the disposal of the next Premier, whoever he may be. If a statesman in whom the country has confidence—for example, MR. FORSTER—were appointed President of the Local Government Board, with a seat in the Cabinet, one of the most formidable of difficulties would be removed out of the way of the new Ministry. We have long and importunately insisted on the claims of the country to a Ministry of Public Health. This need would be satisfied if the Minister upon whom it devolves to carry out the provisions of the Public Health Acts were a member of the Cabinet. The immediate effect of such an arrangement would be to make the health interests of the country an integral part of the Ministerial policy. It could not be otherwise. And thus we should gain in fact what the country has been repeatedly promised in a figure of speech, a policy having for its maxim *Sanitas sanitatum omnia est sanitas.* Nor would it be less convenient on general grounds that the member of the Government who is officially in the closest relations with local interests, and who ought therefore to be especially well acquainted with the working details of the economic system, should have a seat in the innermost council of the State, and be able to bring his practical knowledge to bear on the ordinary business of the country.

Domestic considerations play too small a part in the counsels of the nation. It would go far to amend this fault of our traditional policy if the President of the Local Government Board could be admitted to the Cabinet. That Minister, although at present subordinate, is the chief in authority as censor of local improvements throughout England and Wales. He is the judge of appeal in all questions of expediency, as between the executive bodies empowered under the Local Government Acts and the ratepayers. He is at the head of the Poor-law machinery, and commands, in chief, the army of Health-officers. Nothing is wanting but to give the office to a thoroughly good and trusted statesmen, and to include him in the Cabinet. This last point is essential; upon it everything turns. It would be perplexing rather than useful to send an energetic administrator to this department on the old footing, as was done in years past by the two political parties in succession. The work that waits in the office now held by MR. SCLATER-BOOTH is of a class which can only be done effectively by a Cabinet Minister who would be able to make his influence felt, and to assert the claims of his department, if need be, against the Privy Council itself. The relations into which the Local Government Board must in any great health crisis be thrown with the Privy Council are simply impracticable. In the ordinary discharge of its routine duty even, the friction to which this department is subjected in collision with other nominally, though in no real sense actually, higher branches of the Administration, is destructive to its efficiency. It is a vast Ministry of the Interior, and has claims to a first place in the Government which are unquestionably greater than those of more than one of the departments, which no Prime Minister has yet had the courage to exclude from the Cabinet. What, for example, are the pretensions of the Postmaster-General to a seat at the Council-table, as compared with those of the President of the Local Government Board? The eminent chief of the letter-carrying and telegraphic system might, for any claims his office gives him to a voice in the policy of the country, be a non-political personage. It is a strange anomaly that while this dignitary claims a seat in the Cabinet by right, the head of the local self-government system throughout the country should be an outsider.

We feel it to be a duty to press this matter on the consideration of those who are likely to be at an early date engaged in the construction of a new Government, because the opportunity which exists is very great, and the moment is propitious for the step proposed. The local authorities everywhere are disquieted, many of the Acts which bear directly on local business are working uneasily, and much of the domestic business which presses for attention is of a nature to tax the skill and energy of the new President of the Local Government Board severely. It will, we are convinced, be a blunder to appoint a simply good man, and leave him outside the Cabinet. The sagacity of statesmanship will be better shown by offering the post to a man of proved ability, with a seat in the Cabinet. All that could

be necessary at the outset would be to make the appointment. The country would, we are persuaded, hail the procedure as a token of that spirited domestic policy which it, above all things, desires to see inaugurated. Parliament would not grudge the increase of emolument which must be, and, looking to the amount of work now falling on the President of the Local Government Board, ought to be, attached to his office, if it is to be filled by a Cabinet Minister. There might be a saving in some other direction, and it would be easy, if it were not invidious, to point to more than one office of the highest Ministerial rank in which such an economy might be conveniently carried into effect. Enough, however, has been said to place the matter under the consideration of the Ministers of the future, and of public opinion. Our suggestion is made under a strong sense of duty, and because this department of the Government is that with which the great body of medical men are brought into very close relations, and in regard to which they entertain feelings of interest and expectancy. The whole health question may be placed on an entirely new footing by the step we recommend; and it is certainly one which must have a keen interest for the medical profession and the country at large, because it would create a Ministry and give us a Minister of Health—a double boon, which political policy and public expediency both urgently crave.

A RECENT telegram from India describes a fatality which illustrates, only too exactly, the perils of the hypodermic use of morphia. The Italian Consul at Bombay was suffering from a pain in his leg, and called in an Italian doctor, who sent a prescription to a chemist's for a solution of morphia. In this prescription two "grana" of morphia were ordered. The chemist, misled by the word being written at full-length, mistook it for "grammes." An injection was given, which contained, of course, fifteen times the amount of morphia intended. The mistake was, it is said, at once discovered, and remedies applied, but the patient sank rapidly and died the same evening. The accident illustrates, in a striking manner, the danger of error, on which we have often commented, arising from the similarity of the words "grana" and "grammes," whether written at full-length or in abbreviation—a danger which may well make us hesitate in the adoption of the metrical system. Such mistakes, equally facile and equally fatal, will of necessity attend the change of terms, unless a synonym for gramme can be introduced of less dangerous similarity to the word in present use. But the accident illustrates also, in an emphatic manner, a peril which is incidental to, and inseparable from, the use of morphia by hypodermic injection. An over-dose, once administered, is beyond recall. An excessive quantity, given by the mouth, may be removed if, as in this case, the accident is at once discovered. But if injected through the skin, the only resource is the uncertain influence of antidotal agents. We doubt whether the members of our profession are adequately alive to the risks of death which attend this method of using morphia, or whether they are, as a body, aware of the best method of treatment should an accident occur. To other risks attending the subcutaneous use of morphia attention has been of late fully called. By the labours of LEVINSTEIN and others, the danger of habituation, until the daily dose becomes a necessity, is well known. But the comparative rarity with which an injection is followed by dangerous narcotism may easily cause the risk, real and grave as it is, to be underrated. If recognised by all, it is, we think, adequately estimated by few, especially of the younger members of the profession.

Of the reality of the danger, and of its degree, important evidence is afforded by a recent valuable collection of facts, regarding the hypodermic use of morphia, which has been published in New York by Dr. KANE. Our readers may remember that, some years ago, that gentleman published a series of questions on this subject, and the replies which he has received (357 in number) constitute the material of the work to which we refer. It contains information of interest regarding many points connected with the subject, but of incomparably greatest importance are the facts brought together regarding the occurrence of narcotism and death after what we are accustomed to regard as safe doses, the probable causes of these alarming consequences, and the means by which they may be prevented.

In all, thirty-six cases were reported to Dr. KANE, in which death was ascribed to the hypodermic injection, but in only twenty-five of these were the circumstances sufficiently decisive to leave no reasonable doubt of the relation between the supposed cause and effect. "Many of these cases are as well established as it is possible to establish anything of the kind." Moreover we are reminded, and justly, that recorded cases are probably but a small percentage of those in which death results from this cause. "There is a natural delicacy about exposing one's blunders to the world, especially blunders that have compromised the life or caused the death of a human being. Crimes these will be considered, however much the physician may offer in extenuation, or however great a part may have been played by the idiosyncrasy of the patient." In support of this, Dr. KANE adds that he knows of cases other than those reported, where death was attributed to the hypodermic use of morphia, and yet the physicians will not allow the histories, or even the main facts of the cases, to be used anonymously.

An examination of the causes to which the fatal result was due is very instructive. The smallest single dose, which appears to have been, alone, the cause of death, is a quarter of a grain. In one case, however, in which there existed a natural susceptibility to the influence of opium, death apparently resulted from a twelfth of a grain being administered by the skin, after a quarter of a grain had been given by the mouth. In three cases the patients were suffering from delirium tremens, and in one of these, in which the morphia narcosis unmistakably preceded death, only two eighths of a grain had been given. In the vast majority of cases, however, the toxic effect was distinctly due to the repetition of the hypodermic injection, or to its employment after a fair dose of opium had been given by the mouth. In one instance, for an attack of myalgia in a man who was believed to be healthy, though not quite temperate, a quarter of a grain of morphia was given by the mouth, and then a quarter of a grain by the skin. The patient died. In another case one-sixth of a grain was administered by injection to relieve an attack of asthma, and just after it had been given, the administrator learned that half a drachm of laudanum had been given by the

mouth before his arrival. This patient also died in spite of treatment.

An important practical point, which is well illustrated by several of the cases, is the fact that tolerance of opium or morphia by the mouth does not prove that it will be tolerated equally well by the skin. Another fact, of equal importance, is that tolerance of morphia by hypodermic injection at one time is no ground for inferring that at another time the same dose would be equally well borne. For instance, a robust farmer had had several attacks of biliary colic, for which he was treated by large doses of morphia, &c., by the mouth. In the last of the series two half-grain doses of morphia were injected, without any ill effect. Six months passed without an attack, and then occurred one of great severity, for which a single injection of one grain was given. But the tolerance which had enabled the two half-grain doses to be so well borne, had disappeared in the interval. Deep narcotism followed, and artificial respiration had to be kept up for six hours. He ultimately recovered.

The data collected illustrate very clearly the known fact that in certain morbid states the use of morphia is peculiarly dangerous. Foremost among these is chronic alcoholism. In a considerable number of cases in which death resulted the patients had been intemperate. This renders its use in delirium tremens peculiarly hazardous, and, as we have said, in three of the fatal cases the remedy was given for this disorder. The existence of chronic Bright's disease also increases the danger, and so also does the existence of disease of the heart or lungs, interfering with circulation and respiration. An important fact which is established by the facts collected, and which is contrary to the opinion sometimes expressed, is that the existence of severe pain does not render large doses better borne. In several cases, as soon as the pain disappeared, the patient passed into a state of imminent danger.

But in a considerable number of the cases in which dangerous symptoms or death occurred, the accident was clearly the result of gross carelessness. Indeed, the inexact manner in which so powerful an agent is employed by some Transatlantic physicians cannot but occasion astonishment, and has, we hope and believe, no parallel in this country. In one case, for instance, a patient, after an operation, received an injection of ten minims of a saturated solution of morphia, and died, deeply narcotised, in two hours. The exact dose of morphia was not known (!), but ten minims of water at 60° F. were found to dissolve six grains and a half. No less than three of the medical men who replied to Dr. KANE'S circular are in the habit of carrying the morphia, for convenience, as a loose powder; and when they have occasion to administer it, they guess at the dose of powder, dissolve it in water, and inject it!

The subject of the treatment of morphia-narcosis is well considered in Dr. KANE'S book, in a chapter which, while presenting nothing that is new, brings together the evidence on the subject in a useful manner. The fact that atropine is capable to some extent of counteracting the influence of morphia must be considered as established beyond dispute; and so also is the fact that it must not be regarded as a simple and complete antagonist. We cannot expect that atropine will do all the work in saving a patient. It may assist, but it needs to be supplemented by the other remedies in common use, and its action may also be assisted by the hypodermic injection of strychnia. But care is necessary to administer only the dose of atropine which is necessary to antagonise the quantity of morphia, and this is 1-25th of a grain of atropine to every grain of morphia. Patients have been killed by atropine given to antagonise morphia. A woman, for instance, was deeply narcotised by half a grain of morphia, and repeated injections of atropia were given to counteract the morphia, until half a grain of atropine had been administered. This was sufficient to antagonise six grains of morphia. The woman died with all the signs of atropine poisoning. Strychnia ought not to be used in larger total quantity than 1-20th of a grain, and a much smaller dose should be first administered. Artificial respiration, electricity, and coffee or caffeine, remedies in common use, may, of course, be necessary in addition.

Another accident which sometimes follows an injection is dangerous syncope. It is often assumed that this is due to the injection of the solution into a vein. It may be so in the cases in which the syncopal symptoms occur with great rapidity, but it is doubtful whether the explanation suffices for all cases. The syncope sometimes occurs only after some minutes, and is apparently due to an unusual susceptibility of the pneumogastric centres for the drug, analogous to that which gives rise to vomiting. Instructive examples of both these forms of syncope are given by Dr. KANE. A fourth of a grain was injected into the arm of a weakly woman for neuralgia. "Within a few seconds the breathing became stertorous, the pulse failed, the lips and countenance became livid, the eyes were set; respiration ceased; the radial and cardiac pulsations were lost; the heart-sounds could not be distinguished. The woman was to all appearances dead." By prompt treatment she was, however, revived. Again, a sixth of a grain was injected into a healthy man for lumbago. In five minutes he was relieved of the pain, but in five minutes more he said, "I think I am going to vomit." "He grew deadly pale, his eyes rolled up in his head so that only the whites were visible, the jaws were clenched, the head was drawn back, and the whole body stiffened, respiration ceasing also." With water to the face, &c., he revived in a few minutes.

Whenever there is reason to think, from the rapidity with which such symptoms come on, that the injection has been directly into a vein, the circulation in the limb should be arrested by a ligature above the place of injection. Moreover, the suggestion is worth consideration, whether in such cases as that reported from Bombay, in which the fact of an overdose is at once discovered, something may not be done by local treatment to arrest absorption. Because symptoms manifest themselves a few minutes after an injection into the subcutaneous cellular tissue, we are not justified in assuming that the whole of the morphia injected is absorbed so rapidly. It seems probable that if a ligature were at once placed on the limb, an incision made through the skin at the seat of the injection, and the part freely washed or even freely cauterised, the amount of morphia absorbed might be reduced to a degree in which its antagonism is possible, and the patient's life might be saved.

THE Indian press publish this week some further details of the reforms and reorganisations proposed by the Simla

Army Commission. We have already indicated the principal changes suggested, which embrace the fusion of the Military Medical Service of India with the Army Medical Department, the Civil branch of the Indian Service remaining as at present a semi-distinct body with military commissions and rank, liable to be retransferred to military employ, and acting in times of emergency as a medical reserve. Sir ASHLEY EDEN'S Committee, however, are not content with these proposals, but go still further in their proposals, and would abolish the Royal Service altogether, as far as India is concerned, establishing instead of the present systems a "Local Medical Corps for India." This is to take over the whole medical work, civil and military, of the Empire. The mode of entry into this local service is to be through the British Medical Department, in which all officers must first serve for two years. This notion, we presume, is based on the Indian Staff Corps, which is officered by candidates and volunteers from Queen's regiments of two years' standing. They further suggest that fifty young British medical officers should always be kept in the country to see how the climate and work suit them, and from these, vacancies in the "Local Medical Corps" would be filled. They estimate a saving to the Indian Exchequer of Rs. 2,547,600 annually. As we understand the Committee negative the idea of a local Indian Army (European), we are at a loss to see why they should make an exception for the Medical Department of the Army. The information, however, at present furnished to the Indian Press is so meagre, that we must await fuller and possibly more accurate knowledge before pronouncing a formal judgment on a scheme which may be sweeping and wholesale in its reductions.

The details now furnished modify considerably the statements previously published, and show that the indignation which has been excited on the subject of the proposed changes has been, to some extent at least, uncalled for. It would appear that when the separation is effected between the civil and military services, the loss of the Surgeon-General by the Indian Services in each of the Presidencies, which has been the subject of so many severe comments, will be made up by the creation of a Surgeon-General for the administration of the civil service in each province, in addition to the Sanitary Commissioners and their present staff of medical officers. The Commission propose that, after these officers have been removed from the military branch of the Indian Medical Service, it shall—as previously suggested—be amalgamated with the Army Medical Service, the two forming one list from which the promotions to the administrative ranks shall be made. So that, if this scheme be carried out, the officers of the Army Medical Department will be the losers, for while they will obtain none of the new prizes secured for the civil branch, they will have to share with the military branch the appointments which have heretofore been their portion.

So far as the proposed remedies are known, they seem likely to prove injurious to the Army Medical Department, by abolishing many of their lucrative appointments in India. It should, however, be remembered that these are as yet merely recommendations, which must undergo the scrutiny of the authorities at home, and we are greatly mistaken if they will be sanctioned in the form in which they have been put forward. The necessity for an amalgamation of the two medical services is generally admitted, but it must be carried out on principles of even-handed justice. Neither service must be allowed to bear away an undue proportion of the prizes, and if the Indian service is to come in for a share of the rewards in the military branch, at the expense of the British Medical Department, it would only be justice to admit the latter to a fair share of the lucrative civil appointments. It is stated that in lieu of the course at Netley, young medical officers of the Indian Army will have to undergo a short term of training at one of the Presidency General Hospitals. We trust that the military authorities will never sanction an arrangement so injurious to the best interests alike of the medical officer and of the soldier. The Indian authorities may choose to adopt such a course for the Civil Medical Service, but we cannot believe they will be permitted to introduce a system so prejudicial to the Army.

We opine that the suggestion to form a "Local Medical Corps" will never become *au fait accompli*.

MR. W. H. POWER'S official report to the Local Government Board on an outbreak of trichinosis on board the reformatory school-ship *Cornwall*, moored off Purfleet in the Thames, has been issued, and proves to be of even greater importance than was anticipated. It records not merely a singularly successful inquiry into the origin and nature of an obscure outbreak of disease, but it is in the highest degree suggestive of certain lines of further clinical and pathological research of the greatest moment. The report, like previous reports of the same writer (notably his report on the relation of the localised outbreak of diphtheria in the north-western districts of the metropolis last year to the distribution of a particular milk-supply), is an example of the sort of etiological inquiry for which the medical department of the Local Government Board has made itself famous, and of which it is difficult to say whether the acumen of the investigator in seizing upon and following out obscure clues, the severity of the reasoning, or the seemingly inexhaustible industry displayed excite most admiration.

Our readers will probably remember that in the fall of last year the Local Government Board had been requested to send one of its medical inspectors to the assistance of the governing body and medical officer of the *Cornwall* in investigating what was believed to be a renewed outbreak of enteric fever among the children on board. Two or three years before the ship had been the scene of a considerable outbreak of that disease, suspected to have been caused by fouling of the water-supply with excremental matter from a patient sick of the malady. This outbreak had at the time been made the subject of an independent inquiry by the late Mr. HARRY LEACH, and at his suggestion many improvements were carried out in the hygienic arrangements of the ship. Some time afterwards Mr. NETTEN RADCLIFFE had been directed by the Local Government Board to make an inquiry as to the health of the boys on the ship, and as to possible detriment thereto from the position in which the vessel was moored with reference to the overflows of the metropolitan sewage into the river at Crossness and Barking, several miles above. Mr. RADCLIFFE'S inquiry, although it is stated that

he was unable to complete it, appears to have tended generally to confirm the conclusions Mr. HARRY LEACH had arrived at, and to have led to the adoption of a better system for recording any sickness which might happen on board. There is no room for wonder then that the occurrence of apparently another considerable outbreak of enteric fever among the boys was a cause of grave uneasiness and serious disappointment to the governing body, and that aid was early sought from the Local Government Board, through the Home Secretary, for assistance in searching for the source of this seemingly inexplicable reappearance of a disease against which all possible precautions had been taken under highly competent advice. Mr. W. H. POWER was directed to give this assistance; and, in Mr. MORTIMER DE BRENT, the medical officer of the ship, he found a very able coadjutor. Mr. DE BRENT had kept careful records of the most marked cases, and temperature readings of many. The substance of these records is given in a memorandum annexed to the report, and, together with a series of temperature charts constructed by Mr. POWER from Mr. DE BRENT'S notes, form a peculiarly valuable part of it. At the outset of the inquiry, and for some little time after it had been in progress, nothing appeared that suggested a doubt to Mr. POWER'S mind that he was not dealing with ordinary enteric fever. Certainly sundry anomalies in the progress of the disease early struck the mind, particularly in reference to its fatality (one case only having proved fatal in forty-three cases)—its unusual duration in some cases, its triviality in others, &c.; but the diarrhœa observed in several of the severer cases, an eruption of rose-spots, and at times free hæmorrhage from the bowels appeared to set the question of the nature of the disease at rest. Moreover, in the fatal case death was preceded by symptoms which seemed to betoken perforation of the bowel. But in endeavouring to elucidate the conditions which could foster or determine enteric fever among the boys, whether collectively or individually, or in groups, all efforts failed until the question of the possible influence of food as a condition was entered upon. Here it was presently ascertained that the recurrence of cases, or rather groups of cases, had a very definite relation to the use, at intervals of weeks, of a particular form of food —namely, salt meat,—and that this salt meat might have been, and certainly was during a part of the period over which the inquiry had to extend, salt pork. The question immediately suggested itself to Mr. POWER'S mind, Could this pork have been trichinised? Following out this new line of thought, it quickly became apparent that the order of recurrence of the cases was readily explicable on this assumption; that it not improbably would furnish a clue to the observed anomalies in the progress of the disease; and that it might be the outbreak was one of trichinosis, and not of enteric fever. Under these circumstances, permission was sought of the Home Secretary, and granted, to exhume the body of the lad who had died, and who had been buried two months before; and an examination of the body disclosed that there were none of the pathological changes indicative of enteric fever, and that there had been no perforation of the intestine; while, on the other hand, trichinæ were found largely in the muscles, particularly in the diaphragm, some fully grown and *one wandering and living*, others in different stages of less development, and considerable numbers of brood trichinæ were discovered beneath the under-surface of the mucous membrane of the intestine. Here, then, was proof that Mr. POWER'S assumption had been the right one. There could be no reasonable question that the lad had died from trichinosis, not from enteric fever; and the inference naturally followed that the supposed outbreak of enteric fever had been an outbreak of trichinosis following most probably upon the consumption of trichinised pork. The whole course of this inquiry, as detailed in the report, is one of the completest examples we are acquainted with of a true scientific method successfully applied in etiological research.

But the important question remains of the meaning of trichinosis thus closely simulating, as was the case in this outbreak, enteric fever. On the clinical importance of this semblance we need hardly dwell. It must be obvious that in future the possibility of a confusion between the two diseases will have to be present to all practitioners. But Mr. POWER opens another and more recondite view of the question, which he justly designated as of "supreme importance." In view of the symptoms exhibited in the fatal cases, and other sufferers on board the *Cornwall*, he suggests possible relations of enteric fever to a muscular parasite which require investigation, and which might require material modification of current views respecting the etiology and pathology of that disease. We may be assured that this suggestion will not be suffered to remain sterile in the Medical Department of the Local Board.

On the practical side, moreover, the report is far from barren. Meat for the numerous boys on board the *Cornwall* is cooked in bulk, and it is apparent that portions of trichinised meat so cooked escaped the full amount of heat requisite for the destruction of the parasite. Here, then, arises the question of the method in which meat should be cooked for large bodies of persons, in order to obviate such a danger. Again, it should be practicable in all large establishments to secure an efficient examination of imported pork (the sort of meat, it is inferred, here in question), in view of possible infection with trichinæ.

An interesting memorandum, by Mr. POWER in conjunction with Dr. ROBERT COEY, on the microscopical examination of the parasite discovered in the fatal case, with illustrations, is appended to the report.

Annotations.

"Ne quid nimis."

HEALTH IN SCHOOLS.

IT will be a happy moment for the health interests of humanity when the process of "education" is made to include training with a view to the eradication of inherited disease, the repression of morbid idiosyncrasies, and the scientific—that is, physiological and psychological—culture of such faculties and attributes of the mental and bodily organism as shall conduce to perfect health. One step in this direction will be taken when the professional trainers of youth, and managers of schools generally, are brought to recognise the scope and importance of the work in which they are engaged. At first we must probably be content to struggle for a better hygienic condition of schools and school-houses

than at present prevails. Although Russian authorities on this subject think the English school system perfect from a health point of view, and envy us our advanced position, it would be folly to shut our eyes to the fact that there is much in the *régime* of child-life which is eminently unsatisfactory both in families and "at school." In respect to the food, the clothing, and the habits of the young much remains to be accomplished before we shall even approximate to a perfect system. Meanwhile, it is, perhaps, in respect to the ventilation of schoolrooms, the length of time spent in study, the method of studying, the posture of body long maintained, and the management of light, with the consequent strain on the eyesight of children and of growing youths of both sexes, improvement is most urgently necessary. There is much to be said on these topics, and with a view to lay a solid basis for some practical remarks on the subject, we venture to call teachers and trainers of the young, and schoolkeepers generally, to supply us with brief statements of the system employed in their several establishments. We shall be prepared to classify these statements, and in due season will give the results of our inquiries, with such comments as the data may suggest. The special points to which we have above alluded, together with details of the system of dietary, discipline, and punishments, should form the staple of the communications we invite. It is not opinion we seek, but facts.

THE ACTION OF ALCOHOL.

AN interesting series of experiments on the physiological action of alcohol in its relation to animal heat, and its influence upon the vaso-motor nervous system, has been carried out at the West Riding Asylum by Dr. Bevan Lewis, who has described the results of his investigation in the current number of the *Journal of Mental Science*. Large doses of alcohol lower the temperature of the body, and as Binz has proved that this action is not through the nervous system, it has been inferred that they check tissue metamorphosis. But this involves the assumption that the escape of heat from the surface is not altered. Parkes and Wollowicz, however, could find no evidence that small doses of alcohol check metabolism, and it would therefore seem that, if the two statements are correct, large doses of alcohol lower temperature by lessening tissue change, small doses do not lessen tissue change, and that the action of small and large doses is not the same. But since body heat is the balance between the heat produced and the heat lost, it is evident that the amount of heat which escapes, under the action of alcohol, is an important element in the problem. It is this which Dr. Lewis has investigated, the experiments having been made upon rabbits. The observations were carried on in each experiment in eight successive periods of a quarter of an hour. The heat formation under normal conditions having been ascertained, observations were made after ninety minims of alcohol had been injected. During the first period the production of heat was not far from the normal, rather below in the second, but during the third period it rose to double the normal; during the next three periods it was not far from the normal. A larger dose of alcohol (120 minims, in a smaller rabbit) had a striking effect. During the first quarter of an hour the heat produced was almost *nil*; during the second and third it was greatly increased, more than double the normal; and during the remaining three periods it was still higher. An observation with 180 minims of alcohol gave similar and more marked results. The production of heat was steadily augmented, until on the fifth interval it rose to about four times the normal. Not only is the effect on heat production greater, but it is more persistent after the large doses of alcohol. Thus the maximum production with 40 minims was reached in half an hour, with 90 minims in three-quarters of an hour, with 120 minims in one hour, and with 180 minims in an hour and a quarter. The earliest indication obtained of the action of small doses of the drug always pointed to a primary check to heat formation, which was, however, scarcely recognisable when larger doses were given, being apparently too brief and quick to be measured.

Observations on the temperature of the body showed, it is needless to say, a fall in temperature in all cases. This was greatest during the first quarter of an hour, but proportioned in degree and also in duration to the dose of alcohol which had been given. Not only is the fall of temperature greatest in the first quarter of an hour, when the production of heat undergoes a sensible diminution, but the fall lessens during subsequent periods, and a marked attempt at the restitution of the normal temperature coincides with the period of maximum heat production. In an earlier series of experiments Dr. Lewis studied the effect of chloral in a similar manner, and found almost the same effect upon the production of heat. The combination of the two leads to an extreme vaso-motor paralysis, which is seen very strikingly when alcoholic stimulants have been administered to patients who have taken twenty or thirty grains of chloral. The conclusion, as regards alcohol, is in direct antagonism to the view that in very large doses it lowers temperature by directly checking tissue metamorphosis. The characteristic action of alcohol is to greatly increase the production of heat, whilst dispersion of the freshly-formed heat is facilitated by peripheral vaso-motor paresis. It is only in very small doses that we get a temporary lowering of heat formation.

LONDON MORTALITY.

THE sanitary condition of the metropolis, judged by its recent mortality statistics, can scarcely be considered satisfactory. During the past six months the rate of mortality among the London population has considerably exceeded that recorded among the slightly larger aggregate population of nineteen of the largest provincial English towns. In the last quarter of 1879 the annual death-rate, which averaged 24·2 in the provincial towns, was equal to 24·9 in London; and in the first quarter of this year the metropolitan death-rate rose to 27·3 per 1000, while in the provincial towns it did not average more than 23·8. This signifies that, in equal numbers living, 115 persons have died in London during the past three months to each hundred dying in the provincial towns. This excessive mortality in London is exceptional; but it is a fact, of which the dwellers in London would do well to weigh the importance, that sanitary progress in London in recent years has not kept pace with that in our large provincial towns. That there was greater need and scope for improvement in other large English towns than in London does not afford an entirely satisfactory explanation of this fact. If we examine the mortality statistics of the past ten years, we find that mortality in the twenty largest towns showed a decline of 4·7 per cent. in the more recent quinquenniad, compared with that in the preceding five years; in London, however, the proportional decline of mortality did not exceed 0·7 per cent. In recent years the excess of mortality due to cold has been proportionately greater in London than in other large towns; it is difficult to ignore this fact as affording evidence of low sanitary condition. The recent marked increase of whooping-cough fatality in London is also noteworthy in connexion with the excessive mortality from all causes. During the past thirteen weeks the weekly deaths from whooping-cough in London ranged between 248 and 112, and amounted to no less than 1956 So great a fatality of whooping-cough has not occurred in London since civil registration was established in 1837; the nearest approach to it occurred in 1878, when an epidemic of this

disease was unprecedentedly fatal. These facts call for the earnest attention of the metropolitan sanitary authorities and medical officers of health. It is necessary to guard against a dangerous tendency to fatalism in sanitation, which inclines to the belief that excessive mortality due to cold, and to such epidemic diseases as whooping-cough and measles, is beyond the control of sanitary authorities.

ARMY MEDICAL SCHOOL AT NETLEY.

THE Army Medical School commenced its summer session on the 1st instant. Inspector-General Dr. Maclean, C.B., delivered an eloquent address on the occasion, in which he reviewed the past history of the institution, and showed the essential importance of the studies pursued at it in extending the usefulness of the medical officers and promoting the interests of the public service. The classes have opened with sixty-one candidates for commissions in the different branches of medico-military employment—viz., thirty-five surgeon-probationers for the British Army, twenty-three candidates for her Majesty's Indian Army, and three for the Royal Navy. Two surgeons-major of the Indian Medical Service, and one staff-surgeon R.N., are also named in the lists as going through the courses of instruction. Dr. Maclean in his address acknowledged his regret at seeing the small number of representatives of the naval medical service on the benches before him, but expressed a confident hope that, in spite of certain difficulties there might be on the part of the governing authorities in meeting the expectations of those who were advocating various changes in the terms of naval medical service, a satisfactory solution of them would be found before long. The opening of the session was attended not only by the newly-arrived probationers, but also by the military and medical staffs of all the establishments at Netley.

COLONEL CHAPLIN, M.P., AND MR. SEELY, M.P., ON COMPULSORY VACCINATION.

DEPUTATIONS from the Lincoln branch of the Anti-Compulsory Vaccination League have waited upon Colonel Chaplin, M.P., and Mr. Seely, M.P., to ascertain their views with regard to the law of compulsory vaccination. Both gentlemen expressed themselves very decidedly in favour of retaining the law of compulsion as it stands, but both were willing to promote further inquiry on the subject. Colonel Chaplin attributed much of the ill-feeling existing among many people in the country as to vaccination to carelessness of vaccinators in performing the operation; and Mr. Seely appeared to imply a similar conclusion. Both gentlemen held that the benefits derived from vaccination in the restraint of small-pox outweighed the arguments which had been urged in favour of giving up compulsion; and, in like manner, both gentlemen held that the evils asserted to arise from vaccination were overcome by the benefits accruing from the operation. At any rate, they said they would require other evidence than that tendered by the gentlemen of the deputation to alter their feelings as to the necessity for maintaining compulsory vaccination, but they were prepared to consider additional evidence on the subject, and to further inquiry by Parliament which would be likely to throw additional light on disputed points.

OPHTHALMIC SURGERY AND THE MEDICAL CURRICULUM.

FOR some time past the necessity of ranking ophthalmic surgery among the compulsory subjects in the medical curriculum has been strongly urged; and the various licensing bodies may before long require an almost special knowledge of this branch of surgery from all candidates seeking their diplomas or degrees. About this time last year a memorial, emanating from ophthalmic surgeons in London, was presented to the General Medical Council, drawing attention to the neglect shown to the study of ophthalmology in the ordinary course of medical education; and urging the necessity of making it compulsory upon all medical students to attend a three months' course of practical ophthalmology, as well as a course of not less than twenty lectures on the same subject. A memorial from ophthalmic surgeons was also in last November forwarded to the Council of the Royal College of Surgeons in Ireland, and a reply was received concurring in the views expressed in it as to the great importance of remedying the defect in professional education in the matter of ophthalmic surgery, the chief objection which the Council saw to its introduction being the already overcrowded condition of the curriculum. Owing, however, to the presence in the Council of a gentleman who entered that body principally for the purpose of advocating the proposed measure, the College has lately adopted a resolution requiring all candidates for the diploma in surgery after this year to produce a certificate of attendance upon a three-months' course of clinical instruction in ophthalmic surgery.

THE EFFICIENCY OF THE WATER-TRAP.

A CONTEMPORARY publishes an important experimental investigation by Dr. Neil Carmichael concerning the trap and water-closet system, and their relation to sewage products, gaseous and others. As the result of this investigation Dr. Carmichael came to the conclusion that an efficient water-trap excludes soil-pipe atmosphere to such an extent that what escapes through the water is so little in amount, and so purified by filtration, as to be perfectly harmless. The water-trap, he further concludes, stops entirely the passage of all germs and particles from the air of the soil-pipe, including the specific germs or contagia of disease, which, so far as is known, are particulate. He thus traverses entirely the belief so largely entertained that the water of a trap, however perfect in arrangement, will absorb the air of the soil-pipe until saturated, and then give it off harmfully on the house side. He would rehabilitate the old faith in the sufficiency of the water to insure safety, and he would refer the harm from traps to their imperfect sealing, or to various deteriorations in the structure of the water-closet or soil-pipe which permit direct communication between the air of a house and the air of the soil-pipe. The series of experiments on which Dr. Carmichael has founded these conclusions are exceedingly ingenious, and would certainly appear to justify them, but we doubt whether he has been sufficiently careful in indicating the conditions under which the safety of the water-trap can be secured.

CHILDREN ON THE STAGE.

WE have repeatedly characterised the practice of employing children of tender years on the stage as unwise and unhealthy. The death of a child engaged in the performance of a prominent part in a popular little drama at one of the London theatres, has again attracted attention to the subject. It must not for a moment be forgotten that many of the little creatures who sustain parts in pantomimes and other stage spectacles, are more sufficiently fed and happier by reason of the money they earn; and it is an open question whether they would be better off sitting on the doorsteps of miserable houses, or perhaps lying crouched in corners during some violent family brawls than at the play house.

It is idle to suppose that because a death has occurred it must needs be due to the exposure to which the child was subjected. Nevertheless, it will be well if, in consequence of this painful incident, more care is be-

stowed on the health of these children. Again, we say, children are not in their proper place on the stage, and it is to be regretted that public taste sanctions their appearance. The career which this early introduction to theatrical life opens to a child is not one which can be considered desirable in itself, or favourable to happiness or morality. The stage may sometimes be a "great teacher;" and we are not prepared to regard players as a class, as less "respectable" than the rest of the community; but no observant person would desire to see children of either sex enticed into the ranks of what is called "the theatrical profession." However, it is with the health aspect of the question we are principally concerned; and on the score of health we would warmly urge the necessity for some public regulation to control an industry which is in the main perilous, although it may, and doubtless does, embody a grain of economic good.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

ON the 1st instant an election for an examiner in the vacancy caused by the decease of Mr. O'Leary, M.P., took place. The candidates at first numbered eight, but on the day of election five only contested the appointment—viz., Benjamin G. McDowel, H. Gogarty, M. Kilgarriff, G. Foy, and K. Franks. Mr. McDowel, late Professor of Anatomy and Surgery in the University of Dublin, was selected, and as he was obliged to resign his seat on the Council in order to compete for the examinership, a vacancy for a councillor has taken place. For this there are two candidates: Dr. Corley, of the Richmond Hospital, and Mr. Nixon, of the Ledwich School of Medicine. The election has been fixed for the 15th inst., so that the successful candidate will have but a short tenure of office, as the general elections will take place early in June.

UNDUE DISINFECTION.

AN action was heard in the Scarborough County Court on the 23rd ult. against a former surveyor of the Filey Local Board in which damages to the amount of £5 were claimed for wrongful action in disinfecting the plaintiff's house. It appeared that while the defendant held the appointment of surveyor to the Filey Local Board he had entered the plaintiff's house without proper notice and proceeded to disinfect it, by chlorine gas it was said, on account of scarlet fever in the plaintiff's family. One of the family, a child, was ill at the time. The family, including the sick child, had to remove from the house during the disinfection, and several days passed before they were able to occupy it again. Various articles were damaged in the house by the mode of disinfection employed. A verdict was given for the plaintiff for the damages claimed, with costs, and immediate execution was granted.

A NATIVE HOSPITAL CORPS FOR INDIA.

WE are told that the want of a trained and disciplined corps of orderlies for service in our army hospitals in India is much felt, especially in the hospitals now in the field. A scheme for such a native hospital corps was drawn up by a committee, which sat in 1876, and of which the new Surgeon-General in India, Dr. Crawford, was a member. Its report has, however, been pigeon-holed, and the result is that every day during the existing campaign the medical officers find the very greatest difficulty in getting servants to fill up the vacancies caused by deaths or sickness. The pay now offered is very bad, far lower than that given even to the dhoolie-bearers, and as a consequence the servants are very often the refuse of the bazaars. They need uniform, good pay, fair pensions, a certain amount of drill, and it has also been proved over and over again that they should be armed for self-defence while serving in the midst of murderous tribes on the frontier. We hear with surprise that hospital servants in India are not eligible for medals for field service. This certainly seems unfair.

DEATH OF BRIGADE-SURGEON CORBETT, A.M.D.

OUR obituary column last week announced the death, at the Royal Naval Hospital, Haslar, on the 25th ult., of Brigade-Surgeon A. P. M. Corbett, M.D., Army Medical Department. Dr. Corbett entered the army as an assistant-surgeon on the 27th October, 1854, was shortly after gazetted to the 68th Light Infantry, with which regiment he served in the Crimea, and was present at the fall of Sebastopol—medal and clasp and Turkish medal. Dr. Corbett was promoted Surgeon-Major on the 14th May, 1867, and was selected for the appointment of Brigade-Surgeon, under the terms of the new Medical Warrant, being gazetted to this rank only a few weeks ago. His death, which was due to Bright's disease, was very sudden, he having been but a few days on the sick list.

IN his report on the Dispensaries and Charitable Institutions of the North-Western Provinces and Oudh (quoted in the *Indian Medical Gazette*), Dr. Walker shows that the surgical work done in these hospitals is yearly increasing in amount and importance. The number of large operations performed amounted to 6857, against 4711 in 1877. The list includes 29 amputations of the thigh, 46 of the leg, 32 of the arm, 30 of the forearm, 434 large tumours and cancers removed, 835 operations for the removal of stone from the bladder and 3007 for cataract. There were only four cases of lithotrity, all successful. The death-rate in lithotomy was 8·2 per cent., against 7·8 in 1877. The higher rate of mortality is attributed to the lowered health and physique of the population due to fever and privation. The rates for subjects under twenty were below the average, and those for persons above twenty considerably higher.

THE inquiry into the Lower Thames Valley main sewerage scheme drags its slow length along. The sewage farm at Molesey has been officially inspected, and the plan of Colonel Haywood has received favourable testimony from chemical experts, as well as from Mr. Baldwin Latham. Cross influences, however, seem to be at work. The latest phase in the matter appears to be an application for a provisional order not only to establish a sewage farm at Molesey, but to give the joint Board two years' grace to carry out proper drainage works, and so save penalties threatened by the Conservators for not complying with their order to prevent the sewage going into the Thames. "The latter half of the application," says the *Surrey Advertiser*, "is unopposed, so that in case Colonel Haywood's scheme is rejected, the Board will have to begin *de novo*."

AT a meeting of the lecturers of the Minto House Medical School, held recently, Mr. Geddes was unanimously elected to the vacant Lectureship on Natural History. Mr. Geddes was formerly demonstrator of physiology in University College, London, and more recently of zoology in the University of Aberdeen. We understand that he has just returned from a zoological and palæontological expedition in Mexico, and that he has had considerable experience at the French, German, and Scottish zoological stations.

THE Indian Government have given orders for the construction of a hundred dhoolies, of the pattern designed by Surgeon-Major Hamilton, for service with the army in Afghanistan. This conveyance for the sick and wounded we described at length in our columns on the 23rd of last June, and reports from medical officers serving with the army in the field fully bear out the anticipations expressed as to its simplicity and usefulness.

SURG.-GEN. J. FULLARTON BEATSON, C.I.E., the head of the Bengal Medical Department in Calcutta, retires from the service from the 1st April, his term of duty having expired. Under the new orders of the Government of India regarding the medical administration of the Indian Army, the military Surgeon-Generalship will cease to exist, Dr. Crawford, the principal medical officer of the Royal Army, advising Government on all questions concerning the native troops. Dr. Cunningham, of the Bengal Medical Service, remains as Sanitary Commissioner, and will, it is believed, become Civil Surgeon-General, in addition to his other duties, when the new organisation has been finally sanctioned.

WE would call the attention of young surgeons wishing to increase or complete their stock of surgical appliances, to the sale of the cases of instruments belonging to the Stafford House Committee. The instruments, which include several sets of resection apparatus, are in good condition, most of them being quite new.

THE Secretary to the Government of Bengal has addressed a highly complimentary letter to Surgeon-Major S. B. Partridge, on his resignation of the professorship of Surgery in the Calcutta Medical College and the first surgeoncy of the College Hospital.

THE Vice-President, Council, and Secretary of the Royal College of Surgeons in Ireland, on the 1st inst., presented Dr. Mapother, the president, with six silver saltcellars, in the form of cradles, to commemorate the birth of his child during his year of office.

A MEDICAL SOCIETY has been established at Dacca. The members consist of the teachers of the Medical School, the Civil Hospital assistants attached to the Mitford Medical School, the local practitioners and students.

THE Hospital Saturday and Sunday movement appears to have firmly established itself in New York. On Dec. 28th and 29th the amount collected on behalf of the fund was 25,811 dollars.

DR. BANKS has been elected the Representative of the Queen's University in Ireland in the General Medical Council.

DR. LYONS has been returned to represent Dublin in the Imperial Parliament.

HEALTH OF LARGE ENGLISH TOWNS.

THIRTEENTH WEEK OF 1880.

UNDER the influence of recent cold east winds English urban mortality shows a further increase. In twenty of the largest towns, estimated to contain in the middle of this year seven and a half millions of persons, or nearly one-third of the entire population of England and Wales, 5077 births and 3578 deaths were registered last week. The births were 108 below, whereas the deaths exceeded by 303, the average weekly numbers during 1879. The deaths showed a further increase of 430 upon the low numbers returned in recent weeks. The annual death-rate in the twenty towns, which had been equal to 21·4 and 21·9 in the two preceding weeks, further rose to 24·9 last week. During thirteen weeks ending last Saturday the death-rate in these towns averaged 25·5 per thousand, against 24·2, 25·2, and 27·5 in the corresponding periods of the three years 1877-8-9. The lowest death-rates in the twenty towns last week were 14·4 in Portsmouth, 18·5 in Wolverhampton, 19·6 in Bradford, and 20·2 in Sheffield. The rates in the other towns ranged upwards to 29·3 in Hull, 29·5 in Salford, 29·8 in Oldham, 31·8 in Manchester, 34·1 in Plymouth, and 35·5 in Nottingham.

The deaths referred to the seven principal zymotic diseases in the twenty towns, which had been 476 and 424 in the two previous weeks, rose to 531 last week; these included 215 from whooping-cough, 119 from scarlet fever, and 107 from measles. Only 28 deaths were referred to fever, principally enteric, of which 5 occurred in Sheffield, and 3 in Salford. The annual death-rate from these seven diseases averaged 3·7 per 1000 in the twenty towns; it was but 0·7 and 0·8 in Wolverhampton and Leeds, but ranged upwards to 7·3 and 11·8 in Salford and Plymouth. Whooping-cough showed the largest proportional fatality in Salford and Manchester; scarlet fever in Sunderland and Nottingham; and measles in Plymouth, Nottingham, Hull, and Oldham. The 21 deaths from diphtheria in the twenty towns included 11 in London, 3 in Liverpool, 2 in Leicester, and 2 in Bradford. Small-pox caused 10 more deaths in London and its suburban districts, but not one in any of the nineteen large provincial towns. The number of small-pox patients in the Metropolitan Asylum Hospitals, which in the three preceding weeks had declined from 188 to 167, were 172 on Saturday last; 47 new cases of small-pox were admitted to these hospitals during last week, against 25 and 31 in the two previous weeks. The Highgate Small-pox Hospital contained 19 patients on Saturday last.

A considerable proportion of the increase of deaths last week was due to the greater fatality of lung diseases. The deaths referred to diseases of the respiratory organs in London, which had been 315 and 334 in the two preceding weeks, rose to 395 last week, but were 94 below the corrected weekly average; 256 resulted from bronchitis and 92 from pneumonia. The annual death-rate from diseases of this class was equal to 5·6 per 1000 in London last week; in Liverpool the rate from the same diseases was 7·0 per 1000.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Hastings.—Mr. Charles Ashenden presents a highly satisfactory account of the sanitary state of health of Hastings during the past year. The death-rate (16·84) was that of a rural rather than an urban district. We note with gratification the good use to which the infectious diseases hospital (sanatorium as it is euphemistically called) of the town is put, and the readiness with which mechanics and small tradesmen availed themselves of it in cases of infectious sickness, also of the sanitary authorities' disinfecting apparatus. Few things will more certainly redound to the popularity of a health-resort among visitors than the knowledge that it is prepared to diminish risks from infection to the lowest point.

Hereford, City and County.—Dr. Vavasour Sandford's annual report for the combined rural and urban sanitary districts under his sanitary supervision shows a heightened mortality from diseases other than infectious and contagious, and "almost a total immunity from this latter class of maladies." This immunity he assigns to the efficient sanitary administration of the districts in regard to current infections; and the greater prevalence of other sorts of sickness, which is to be inferred from the greater mortality from them, he attributes to the sunlessness and unusual humidity of the seasons. Man, in fact, suffered in common with the crops and herds from the exceptionally bad weather which prevailed last year. He draws especial attention to the operation of the Public Health (Water) Act of 1878 in his district, and states that with respect to the "reasonable distance" of a water-supply from a dwelling, his sanitary authorities have laid down the rule that in regard to houses now in occupation, 500 yards shall be regarded as a "reasonable distance," but that in respect to houses built hereafter, 200 yards shall be so regarded. He has some remarks deserving of special attention upon the failure (too common, it would appear, in his district) to provide good water, in connexion with schools, for the use of the children.

Maidstone.—Mr. Matthew A. Adams reports for the past year a birth-rate of 32·9, and a death-rate of 19·5. Maidstone has much to do before she will have relieved herself from the filthy backalums she possesses, and not a few dilapidated and damp dwellings, as well as her offensive privies. But she seems to be moving in the right direc-

tion, and her medical officer of health seems hopeful for the future.

Peterborough (Urban).—Dr. Thompson reports a death-rate of 22·4 in 1879, as against 24·1 in 1878. Scarlet fever appears to have been prevalent in the city during a great part of the year. But Peterborough has neither a hospital for infectious diseases nor a disinfecting apparatus!

Thingoe.—Mr. Charles Scott Kilner reports a death-rate of 16·5 per 1000 population in this rural district for the past year, as against 12·5 in 1878, the greater mortality occurring among infants and persons above sixty years of age.

Tottenham.—Dr. Watson refers to the extraordinary growth of this place. From February, 1875, to February, 1880, the Local Board, it appears, have approved of no less than 15,500 (or thereabouts) plans for houses. Nevertheless the death-rate from all causes in 1879 did not exceed 17·6, and there are other indications that the sanitary administration of Tottenham is now being carried out by its Local Board with much efficiency.

THE ROYAL COLLEGE OF SURGEONS.

AT a special meeting of the Council, held on Wednesday last, Mr. John Cooper Forster was unanimously re-elected a member of the Court of Examiners in Surgery. At a quarterly meeting, held on Thursday, the minutes of the preceding ordinary meeting, held March 11th, were confirmed, after a long criticism, by Mr. Simon; the report of the Committee on bye-laws relating to fees being adopted, with some modifications, the most important of which is the retention of the payment of fees by examiners on election. The Collegiate Triennial Prize was awarded to Mr. G. A. Woods, of Southport, for his essay on "The Anatomy and Physiology of the Third, Fourth, and Sixth Nerves."

Correspondence.

"Audi alteram partem."

MR. BADCOCK'S EXPERIMENTS ON THE VARIOLISATION OF KINE.

To the Editor of THE LANCET.

SIR,—Mr. Badcock, of St. James's-street, Brighton, having suffered in his infancy severely, and being much marked with the small-pox, determined upon performing some experiments upon some cows, which he kept, by inoculating them with the matter of the small-pox taken from the human subject. About forty years ago, the late Sir Cordy Burrows gave Mr. Badcock some small-pox ichor, which he had taken from one of his patients; Mr. Badcock inserted this ichor into one of his cows. After the lapse of a week, when it had produced a vesicle upon the cow, a human subject was vaccinated with the lymph thus produced, and the result was the facsimile of the vesicle which Jenner discovered fifty years before. Mr. Badcock employed a photographer, who took from the cow the likeness of the vesicle which he had produced, and then exhibited the photographs to the Brighton Medical Society, thus triumphantly confirming the value of Jenner's discovery, and placing the protective power of the vaccine upon an indisputable basis. The vaccine discovered and the vaccine produced being identical, it is a proof that the vaccine is unalterable, for after passing through the constitutions of 2500 persons during fifty years, it remains precisely the same thing. The fact is, vaccinia is a disease *sui generis*, and, like the small-pox, measles, and scarlet fever, incapable of admixture with any other disease. If you sow a radish seed you cannot produce a cucumber. If you sow a bean you will not produce a carrot. As well might it be said, that you can produce vaccinia by syphilis, as that you can produce syphilis by vaccine. This is not my opinion only, but also of all those public vaccinators (and their name is legion) whose opinions I have elicited upon the subject. I accompanied Mr. Badcock to his stall, and saw him take some vaccine from a cow which he had variolated the week before. Being at the time public vaccinator to the Western district of Brighton, I inserted the matter so taken, which Mr. Badcock kindly gave me at the time, into one of the children. I kept up that supply for about twenty years, until I resigned the office, as I preferred the matter so converted to all others. A great objection, and much of the prejudice against vaccination, would, I think, be removed by the most gentle method of vaccinating. I make a few horizontal scratches on the arm, just penetrating the cuticle; then, removing the blood and stretching open the incision, I insert the matter. By this means I have produced excellent vesicles without awakening a child who was asleep. By this method a peculiar mark is left on the arm, which is easily recognisable. Since my retiring from practice in 1870, Dr. Ross informs me two epidemics of small-pox have occurred in Brighton, but that *not one person so marked by me has ever been attacked by the small-pox*. One peculiarity with me is that I always vaccinate both arms, and taking the matter from one arm leave the other untouched, to be absorbed into the constitution, for the better protection of the person vaccinated. All honour, then, to Messrs. Ceely and Badcock, who have thus so satisfactorily solved the problem, till that time inexplicable—namely, Why does vaccination prevent the small-pox? and thus, by placing it as it were into a living alembic, have transmuted the small-pox from a repulsive, disfiguring, blinding, deadly disease into one perfectly harmless, as we have seen in Brighton, even to an infant just born.

I am, Sir, yours respectfully,

D. RICHARDSON, M.R.C.S., L.S.A.

Newhaven, Sussex, March, 1880.

SIR W. JENNER, BART., ON ENTERIC FEVER.

To the Editor of THE LANCET.

SIR,—By the last San Francisco mail arrived the numbers of THE LANCET for November containing Sir William Jenner's address on the treatment of enteric fever and Sir Joseph Fayrer's address on assuming office as president of the Epidemiological Society.

I should not presume to question Sir W. Jenner's authority on any point as far as concerns enteric fever, as seen in London, or even in England—although enteric fever in rural districts among paupers differs widely from that seen in London—but a reference to Sir Joseph Fayrer's address shows that on one important point the Indian authorities are at variance with Sir W. Jenner. The latter speaks of it repeatedly as a specific disease, produced, "in the majority of cases at least, by the action of a small portion of the excreta from the bowel of a person suffering from typhoid fever." (THE LANCET, Nov. 15th, 1879, p. 715.) Sir Joseph Fayrer maintains that "a form of fever exactly like European typhoid, except in its etiology, exists in India, and other hot and malarious countries, and that it is due to *climatic causes, not to filth or specific causes*." (THE LANCET, Nov. 8th, 1879, p. 678.) The italics are mine. Sir William Jenner maintains that he has "never known a case of typhoid fever cut short by any remedial agent that is cured," and that the "natural duration of a well-developed case of typhoid fever is from twenty-eight to thirty days." Sir Joseph quotes from a report of Surgeon-Major A. Clarke a statement that numerous cases entered as enteric were discharged, and at their duty five or six days afterwards, though "rose-spots are invariably present, and in fatal cases the lesions of Peyer's patches are well marked." In other words, the disease is either cut short by treatment, or there are numerous cases of such a mild character that they get well in a few days.

Now, everyone who has seen enteric fever in tropical countries and amongst other than European races, must agree with Sir Joseph Fayrer. The disease is most protean in its character, and unless one is prepared to maintain that in the same house, in the same climate, amongst people living under exactly the same conditions, two or more forms of fever can spring up at the same time, one must admit that the same poison will vary in its effects on different individuals according to their constitutional peculiarities.

I have seen an epidemic of enteric fever breaking out on board an emigrant ship in lat. 41° N., continuing with us after we had rounded the Cape of Good Hope, lat. 34° S., and thence on until after we reached Dunedin, New

Zealand, lat. 46° S., with gradually increasing severity. I took careful notes of all the cases, sixty in number, and some of them were cases that would be called febricula at home, lasting only a week; others, commencing in exactly the same way, were cut short by producing profuse diaphoresis, and terminated in a couple of days; while twelve were fatal on board ship, and four more died in quarantine. All the fatal cases presented the characteristic lesions of Peyer's patches. Fever broke out after we had been at sea a month. Surely no one could doubt that all the cases were caused by the same poison, although they differed greatly in the symptoms, duration, and severity of the disease.

As regards treatment, I am rather surprised that Sir W. Jenner says nothing about the unmistakable action of aconite in lessening the frequency of the pulse and lowering temperature in the early stages of the fever. For the last twenty-five years I have been in the habit of giving aconite in the form of Fleming's tincture, three to five minims, every four hours, with this object, and have rarely seen it fail to do good, not only in enteric fever, but in all febrile diseases or acute inflammations. The wet pack is also a most powerful agent, and affords immense relief. I use it with the view of assisting the elimination of the poison by the skin, on the ground that the poison, by producing the rose-spots, shows a tendency to eliminate itself in that way, and if we can encourage this tendency we shall lessen the danger of internal lesions.

Sir W. Jenner does not mention a valuable practical rule for the administration of alcoholic stimulants, which I was taught as a student—namely, to listen daily to the heart, and give stimulants as soon as the first sound begins to flag. I have found in the tropics that good sound Bordeaux wine answers in most cases even better than spirits. Preparations of bark, particularly the liquid extract, are also very useful in the latter stages of the disease.

It may seem presumptuous in an unknown practitioner to venture on criticising a man of Sir W. Jenner's justly-earned reputation; but, after all, a man who has treated enteric fever in London and the rural districts of England, in the wards of the Scutari Hospitals, in the Crimea, in the West Indies, in South America, in Australia, in New Zealand, and in all the climates ranging from 52° N. lat. to 37° S. lat.—among Europeans of almost every nation, negroes, Chinese, East Indians, both Hindoos and Mahometans, and in white and coloured natives of tropical regions—may perhaps be pardoned if, after being engaged in the study and practice of the profession for thirty-two years, he has an opinion of his own—*pace* even Sir William Jenner.

I am, Sir, yours, &c.,

R. H. BAKEWELL, M.D.,
Surgeon Superintendent of the Totara District Hospital, Ross, New Zealand.

Ross, New Zealand, Jan. 24th, 1880.

THE CROTON-OIL TREATMENT OF RINGWORM.

To the Editor of THE LANCET.

SIR,—Having just read Mr. Cottle's instructive paper on the croton-oil treatment of ringworm in THE LANCET of March 27th, in which he refers to my paper on the same subject published in the January numbers, I at once frankly admit that he *published* a treatment by croton oil previous to the appearance of my paper; yet in justice to myself I ought to state that I had neither seen nor heard of Mr. Cottle's paper read before the Dermatological Section of the British Medical Association in August last, that my paper was written at least eighteen months ago, and that I have specially worked out the croton-oil treatment of ringworm for over six years. I did not publish my results till January last, as I wished to thoroughly try the treatment before bringing it under the notice of the profession; and during the last few years I have frequently spoken to many dermatologists about it.

But I fail to see from the report I have now read of Mr. Cottle's former paper, or from his recent one in THE LANCET, that his treatment is quite the same as mine. It appears to me to differ in a most essential point.

Mr. Cottle says that I appear to him to carry my treatment "to an unnecessarily severe extent;" and he advises an application of the oil "to produce a deep pustular rash;" he also thinks it sufficient to set up a pustular rash involving the tissues to the depth of the hair-follicles, and "*that the formation of a subcutaneous abscess is unnecessary;*" and again, "that it is not necessary to produce *a real subcutaneous abscess or kerion*,"—"a copious pustular rash being all that is required."

Now in the first place, as it would appear from the above that I am in the habit of producing an abscess, I must call attention to the fact that *kerion* is not a subcutaneous abscess, and that I have never advised the formation of abscesses or any other such severe treatment. "Kerion," according to Dr. Tilbury Fox, "has the *appearance* of a threatening abscess; the patches are swollen, puffy, raised, red, tender, feeling semi-fluctuant and soft. They are studded over with little openings which are the mouths of the hair-follicles, and from which a muciform or purulent discharge exudes. Some of the hairs fall out, others lie loose in the follicles." This is true kerion—a variety of the disease that may occur under any treatment—the artificial production of which I specially advised in my paper, and not the simple formation of a pustular rash, which, though it is certainly very effectual in curing ordinary chronic ringworm, yet will most certainly fail in the inveterate forms of the disease. The pustular rash is not therefore the essential part of my treatment, but the actual infiltration of the true skin with inflammatory products, causing the hair to become loosened. If this state can be produced the case is practically cured, and the further use of parasiticides is not necessary, as the inflammatory effusion destroys the fungus.

Secondly, I must mention the fact that I only advised this "severe treatment" in those chronic cases that have resisted all ordinary applications, and can most positively affirm, from six years' experience, that the croton-oil rash alone will not cure many of the inveterate forms of the disease. If the case be left alone after one or two applications of the oil, followed by a pustular rash and yellow incrustation, but without the puffy swelling of the part, all may seem well, and the disease may appear to be cured, yet the stumps will crop up again and again. I speak very strongly on this point, as medical men so often make a mistake in thinking a patch well because it *appears* free from stumps. In ordinary private and hospital practice cases are often not seen again because they are considered well, and yet if they were examined after two or four weeks (as boys are, after having had ringworm, in a large school) the diseased stumps would constantly be found to have reappeared.

Mr. Cottle seems to prefer the croton-oil liniment to the pure oil. I always used the former preparation at first, but gave it up four years ago for the oil, as the alcoholic solution is more apt to run beyond the limits of the spot painted with it, and thus to cause pustulation where it is not wanted. This is especially seen when applying the oil to isolated stumps, as described in my paper.

The essential difference, therefore, between Mr. Cottle's treatment and my own is, that while Mr. Cottle seems satisfied with a deep pustular rash, I try by repeated poulticing to produce an *imitation* of true kerion, which is nature's certain cure of the disease. The process I advise I have already fully described in my paper, published in the January numbers of THE LANCET.

In conclusion, I may add that I am only too pleased to find Mr. Cottle has been employing croton oil as a remedy for ringworm, and that my object now is not so much to seek priority as to get the profession to recognise the efficiency of the croton-oil production of kerion as a certain and speedy cure in the most inveterate forms of the disease.

I remain, Sir, yours, &c.,

ALDER SMITH, M.B. Lond., F.R.C.S.,
Resident Medical Officer, Christ's Hospital.

April 6th, 1880.

TREATMENT OF RHEUMATISM BY IODIDE OF POTASSIUM AND OPIUM.

To the Editor of THE LANCET.

SIR,—If there is one science which is and ought to be progressive it is the science of medicine, whereas if we agree with Dr. Barton in THE LANCET of Feb. 14th we must remain satisfied with a conservatism which contents itself with that which is unreliable and often inefficient. For I think he will hardly venture to state that the treatment of acute rheumatism by iodide of potassium is so satisfactory in its results as to leave nothing more speedy or effica-

cious to be desired. He says, "Why resort to doubtful and dangerous remedies merely because they are new?" But surely if we are not to try new remedies, but to continue those which are old and often utterly inefficient, we shall make no progress at all. From what I have seen in hospital practice of the use of iodide of potassium in the treatment of acute rheumatism, it is of little avail in meeting any of the urgent symptoms, such as pain, effusion into the joints, or high temperature, and Dr. Barton is compelled to supplement it by blisters, Dover's powder, &c.

Anyone who has seen two cases treated, the one with carefully-regulated doses of salicylic acid, where the patient is free from pain and swelling, with an abated temperature, in from twenty-four to thirty-six hours, and the other treated in the old-fashioned and somewhat barbarous plan of blisters, first on one joint, then on another, &c., until the patient suffers almost as much agony from the blisters as from the disease, and where, finally, the disease itself remains almost unabated, only shifting its quarters, and lasting "generally a week or ten days"—anyone who has seen such cases could not fail to say at all events in which case there is the least pain.

I think Dr. Barton is in error in stating that salicylic acid has in any one case been proved to have caused a fatal result, and I demur to his calling it "a doubtful and dangerous remedy." There is no evidence whatever to show that deaths or cardiac complications are more frequent under its use, if not the reverse. I have treated some fifty cases with salicylic acid, combined with the minimum of bicarbonate of soda and ammonia, to effect its solution, and published a letter with a report of a few in THE LANCET, 1877, whilst I made a series of experiments upon guinea-pigs,[1] &c., giving one twenty grains every day for a fortnight, without any ill results, the said animal being alive a year after, and I also gave it doses of ten grains, which, considering the size of the animal, is a very large dose.

Whatever may be the relative merits of the salicylic-acid treatment, and that by other methods, such as the alkaline or iodide of potassium, as regards the frequency of relapses, the chances of cardiac complications—these are only to be determined by an accumulated amount of experience, and revealed by statistics; but I am of opinion, from my own experience, and that of many others, that the former method of treatment is far superior to the other methods in the rapidity with which it lowers the temperature, and relieves the pain, if it does not also shorten the duration of the disease.

Timidity in dosing (which is but natural to those who believe in the dangerous nature of the remedy) is one cause, and the principal one, of the failures which occur in the salicylic treatment. I found that I could detect it in the urine within ten minutes after its administration, and in the blood in less than that time. Considering then its rapid elimination from the system it is useless to give doses of ten or fifteen grains every four or six hours.

In the report of the Boston City Hospital, 1877, as regards the duration of the disease under this treatment, the average time to relief of pain was 1·46 days, complete cessation of pain 2·85 days, the average time the acid was given was 6·22 days, and the stay in the hospital 18 days. The total number of cases, 106. These figures certainly show better results than any yet obtained under any other treatment; at the same time they are much more favourable than Dr. Southey's recently-reported account of fifty cases under the same treatment.

I believe that by the use of a combination of iron and salicylic acid the anæmic condition and debility frequent after the use of the acid alone, or combined with soda, may be avoided, and thus the stay in hospital, apparently so prolonged after the actual cessation of the disease, may be shortened. I have always given it in this form after the first few days, and the result has been most satisfactory.

The form in which I use the acid is as follows: Salicylic acid, 20 gr.; carbonate of ammonia, 5 gr.; bicarbonate of soda, 5 gr.; water to one ounce; and I afterwards add 5 or 10 minims of tincture of perchloride of iron. I have found this more effectual than the simple salicylate of soda, and less depressing. It is also much more active than salicine.

As far as regards relapsing and subacute rheumatism (and Dr. Barton's remarks would appear to apply to that form rather than to the acute disease), I have found that the salicylate treatment is not so successful, and I prefer to use iodide of potassium or some other drug.

I remain, Sir, yours truly,
ENGLEDUE PRIDEAUX, L.R.C.P. Lond., &c.

Wellington, Somerset, Feb. 17th, 1880.

*** The publication of this letter has been unavoidably delayed.—ED. L.

[1] The Practitioner, September, 1878.

SALICYLATE OF QUININE.

To the Editor of THE LANCET.

SIR,—Perhaps you will allow me, by way of supplementing my remarks on salicylate of quinine, to state that during the last two or three weeks I have had several favourable opportunities of further testing the value of this medicine.

I have had no case of acute rheumatic fever wherein to administer it. My cases have rather been mild, subacute gouty, or rheumatic-gouty, with erratic pains, muscular and articular. In one case of chronic gout in a lady beyond the middle term of life, I had to discontinue the medicine in consequence of headache, which it was supposed to occasion. In all the others the effect has been satisfactory, and in four remarkably striking, the patients themselves commenting on its success, and asking to be allowed to have recourse to it again should necessity arise.

I would more particularly roughly narrate one case. It is that of a young gentleman, the descendant of an eminently gouty family. Both grandfather and father have been so afflicted for a large portion of their lives. The father, still living, and between seventy and eighty, has had gout for at least forty years. The son, my patient, aged thirty-three, had his first attack of gout two years ago. It was an acute attack. One foot and great toe, especially, were the seat of the affection. Since that time he has only had slight threatenings. Recently, however, he observed that he was becoming rapidly and uncomfortably stout. His hands and fingers, his feet and his toes, were swollen and puffy, and he was unable to write with comfort. Being private secretary in a department of H.M.'s service, at a very busy time, it was important that he should be able to discharge the pressing duties of his secretaryship. Medicines which used to benefit him seemed of comparatively little avail now. I had just come to know the benefit of salicylate of quinine, and I brought it into requisition. I administered it in three-grain doses every six hours. The result was as rapid and satisfactory as anyone could desire, for in the course of thirty-six hours the swellings had nearly quite disappeared. He soon became quite well.

I may state that in all the cases where I have employed this salt no other medicine whatever was used.

I am, Sir, your obedient servant,
Chester-square, April 5th, 1880. ARCHIBALD HEWAN.

*** In reference to the difficulty of obtaining salicylate of quinine, mentioned in Dr. Hewan's former letter (THE LANCET, April 3rd), we have received communications from Messrs. Young and Postans, and Messrs. Gale and Co.—ED. L.

CHIAN TURPENTINE FOR CANCER.

To the Editor of THE LANCET.

SIR,—As Mr. Clay does not make it quite clear whether he regards his experiments with Chian turpentine in the treatment of cancer as absolutely new or merely as revivals, you will perhaps permit me to state that turpentine is not a novel remedy for this disease. During some recent consultations, for a purely literary purpose, of Paracelsus' writings, I encountered in the "Chirurgia Magna," and elsewhere, many references to the treatment of the various forms of cancer, ulcer, fistula, &c., by means of balsams, resins, and turpentine, both as local applications and as internal medicines. I do not remember to have met with the precise mention of Chian turpentine, but the list of "turpentines" given in the second book "De Præparationibus," makes it almost certain that Chian turpentine was included. In the works of Riverius, into a translation of which I casually looked on reading Mr. Clay's paper, turpentine,

bdellium, myrrh, &c., are recommended for the cure of cancer of liver, spleen, womb, and other organs.

I am, Sir, yours truly,

Harley-street, W., April 6th. JOHN TWEEDY.

A CASE OF EARLY PREGNANCY.

To the Editor of THE LANCET.

SIR,—As the following case appears to me to possess some interest, I am induced to call attention to it. Although there are cases of pregnancy on record as occurring in England at an earlier age than the following, yet the girl in this instance was so extremely young, and parturition proved so unexpectedly easy, that the matter seems worthy of being recorded:—

L. E—— (born February 7th, 1867, daughter of a farmer) was brought to me in November last to be treated for amenorrhœa. I learned from her mother that the menstrual flow, which had made its first appearance during the preceding April, had not occurred since. Struck by the peculiar figure of the girl, I inquired of the mother whether she had any suspicion of the nature of her daughter's condition, and I then elicited that it had recently come to the knowledge of the parents that there had been an improper intimacy between her and a lad of twenty, employed as farm servant. In consequence of this I made an examination, which verified my suspicion that she was pregnant. I may here mention that the affair became subsequently the subject of criminal proceedings against the lad, who in January last was sentenced to a term of twelve months' imprisonment under the provisions of the recent Act of Parliament.

Although L. E—— was more developed than are most girls of the same age, I naturally anticipated, from her extreme youth, a very tedious if not perilous labour. The sequel will show how agreeably I was disappointed.

On the morning of Feb. 26th I was sent for to visit her, and on reaching the house learned that labour had commenced the previous morning at about half-past ten o'clock. At the time of my arrival (8.30 A.M.) I found the os uteri fully dilated and the head presenting in the first position. From that point labour progressed rapidly, and in one hour and a half terminated in the birth of a healthy, well-developed male child. The mother never had a bad symptom, and both she and the child have been doing well since.

It will be seen from the above dates that L. E—— was, on the birth of the infant, thirteen years and nineteen days old.

I remain, Sir, your obedient servant,

ALBERT E. MAY, L.R.C.P. Ed., &c.

Moreton-Hampstead, March 16th, 1880.

THE BEARER CORPS IN SOUTH AFRICA.

To the Editor of THE LANCET.

SIR,—Although it is a matter of very secondary importance to anyone as to which was the first Bearer Company in action in the late war in South Africa, yet as it appears to have been made a matter of moment by Surgeon-Major Scott in his recent letter to THE LANCET (p. 266), I may remark that a regularly-organised company of Kroomen belonging to the Naval Brigade, previously trained by Fleet Surgeon Norbury, R.N., C.B., was in action with that officer at the battle of Inyezane in January, 1879, and besides this, there was also a large number of trained Native Bearers.

I am, Sir, yours faithfully,

JOHN BOWDEN TRIGGS, M.B., Surgeon R.N.,
In Medical Charge of H.M. Flag-ship *Active* during the late war.

Royal Naval Hospital, Cape of Good Hope, March 15th, 1880.

HONORARY QUEEN'S CADETSHIPS.

To the Editor of THE LANCET.

SIR,—There are a certain number of cadetships given every year at Sandhurst, called "honorary Queen's cadetships." These are not to be confounded with "Queen's cadetships." The first-mentioned are boons conferred on officers' sons whose fathers have done good service in the army, and the holders have only to "qualify," and not to "compete," for their commissions. By the warrant these boons are limited to the sons of the so-called "combatant" officers. The sons of medical officers are excluded from them, no matter what good service their fathers may have done. This is most unjust.—Yours, &c.,

March, 1880. I.V.R.C.

PARIS.

(*From our own Correspondent.*)

THE proposal to create a new chair of Pathological Anatomy has met with the greatest opposition on the part of the Faculty of Medicine. The professors have all signed a report, which has been sent into the Minister; and they have concluded that the proposed innovation is unnecessary, and that it may be dangerous. It is of course true that it is not absolutely necessary to appoint a new *professor* for this purpose; a post of less importance, such as that of *chef des travaux anatomo-pathologiques*, might be sufficient, and in this manner the wounded susceptibility of the faculty would be soothed. It is also true that such a precedent might prove dangerous to the interests of the present professors, who have every reason to keep their number as restricted as possible. But as far as teaching is concerned, this report is simply a quibble; some change is greatly needed. At the present time practical morbid anatomy is not taught at all in Paris. Post-mortem examinations are only held at the caprice of the house-surgeons and physicians, and that so irregularly, that a student might pass weeks on the look-out for an autopsy. Paris is not only behind Europe in this respect, but also far behind some of the French provincial schools. At Nancy, autopsies are performed in all cases by a competent pathologist, M. Feltz, the professor of anatomy. In Lyons, similar functions are performed by M. Pierret; and at Lille, by M. Kelsch. There is one reason against the new creation in Paris which, although freely whispered, has not yet been stated. The professor who was designed for the chair by the Minister of Public Instruction, M. Cornil, whose work in connexion with morbid histology is well known, happens to be a member of the Chamber of Deputies. The Faculty of Medicine affects the belief that the whole affair looks very like a job, and is afraid that it would afford a precedent for the future creation of new chairs, to suit the convenience of Ministerial favourites. It will be a great pity if the opposition of the Faculty be allowed to prevail. However the wire-pulling may have been conducted, there can be no doubt that some radical improvement is urgently required.

The Société de Médecine Publique et d'Hygiène Professionelle are going to discuss the proposition of one of their members, Dr. Bourgeois, that the State should take measures to prevent the marriage of individuals suffering from certain hereditary diseases which are most generally transmitted to the offspring. According to Dr. Bourgeois, by the prohibition of such ill-advised alliances, phthisis, epilepsy, and mental disease would soon be exterminated. The commission appointed to examine and report upon the proposition, has, as might be anticipated, concluded against it. In the French law there is only one case in which an individual is incapable of contracting marriage, and that is in the case of an *interdit*—that is, a person interdicted on account of mental incapacity from the exercise of civil rights, and this is on legal, rather than on hygienic grounds. For a marriage to be legal consent must be given, and as an *interdit* cannot legally give a valid consent, he cannot contract marriage. Dr. Bourgeois would have every candidate for wedlock submit to medical examination, and would allow marriage to those only who had obtained a medical licence. He also thinks that a difference of twenty-five years between the ages of the two parties should constitute an absolute bar to their union when one of them is over sixty, so that a man of that age would be forbidden to marry a woman of four-and-thirty.

The *République Française* of this day relates a remarkable freak of nature which has occurred at Cherbourg, and which it copies out of the *Vigie de Cherbourg*. If the *République Française* were not always of the most respectable prosiness, one might suppose that it was trying to get off what Artemus Ward would call a "goak." The "infant phenomenon" in question is a child, six months old, and the *Vigie* seems proud that Cherbourg should be privileged to show a marvel

which "is without doubt unique since the creation of the world." This child has a spot upon its head out of which grows a feather every six days. The editor of the *Vigie* states that he has seen all the preceding feathers, and that he has assisted at the growth and fall of one of them. A pimple forms on the nape of the child's neck which soon opens and gives exit to the feather, which attains its full length of 10—12 centimetres in six days, and then falls. It has golden edges, and is of the most beautiful and varied hues. The father of this child is coming to Paris to show his interesting babe to the members of the Academy of Medicine. I leave the entire responsibility of this statement with the *République Française*, which must either have copied innocently from the *Vigie* of April 1st, or have maliciously conspired with its provincial contemporary to poke fun at a scientific body of inoffensive old gentlemen.

Paris, April 7th, 1880.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The following gentlemen passed the primary examination in Anatomy and Physiology at Meetings of the Board of Examiners on Monday, Tuesday, and Wednesday last:—

Harry Swift, W. C. Bull, Arthur D. Roe, J. R. Harry, Henry W. Pigeon, Edward Harrison, and John C. Aldred, Cambridge and Liverpool Schools; John H. Baker, David H. Barley, Anthony Dodd, Robert H. Howell, Henry M. Penwick, Newcastle-on-Tyne College of Medicine; John S. Moreton, George Preston, John S. Withers, James Richmond, Thomas L. Jordan, Charles S. Chadwick, Richard Holton, John J. Berry, John M. Beverley, Alexander Wilson, Joseph Collier, Cedric Challinor, and Alfred Hall, Owens College, Manchester; Walter C. Garman, Thomas P. Lowe, G. G. Jones, and Arthur H. Wilson, Liverpool; Charles F. Coombe and Edward France, Sheffield; Arthur Bowe, George Millhouse, John Ducre, Walter Scatchard, Henry Pope, and Rustace G. Carter, Leeds; Henry Shillito, Septimus Sunderland, John H. North, James R. Polson, and William Joberns, Birmingham; Lawrence R. A. Salmon, William H. Francis, Bristol; William J. Haddock, Charing-cross Hospital; John Hosford, Cork; Francis H. Furnival and Sandford S. Lessey, St. Thomas's Hospital; F. F. Schacht, St. George's Hospital; Samuel Aspinall, St. Mary's Hospital; John T. Tibbles, Charing-cross Hospital; Wheelton Hind, Guy's Hospital; Charles E France, Middlesex Hospital; Sidney H. C. Martin, University College; and Edwin J. Wenyon, Guy's Hospital.

APOTHECARIES' HALL.—The following gentlemen passed their examination in the Science and Practice of Medicine, and received certificates to practise, on April 1st:—

Adams, Joseph, Royal Infirmary, Edinburgh.
Davies, Jenkin, Sidney-road, Stockwell.
Fraser, Donald Alexander, Weston-super-Mare.
Walters, Fredk. Rufenacht, The Waldrons, Croydon.
Wheeler, Fredk. John, Grafton-road, Holloway.

The following gentlemen on the same day passed the Primary Professional Examination:—

Charles Rowland Ordish Garrard, Guy's Hospital; Robert Henry Rowell, Newcastle-on-Tyne.

THE annual Report of the Leeds General Infirmary unfortunately shows a balance due to the treasurer of £3311, with a gradual decrease of income, and an increase in the number of patients.

A SPECIAL appeal for funds has been put forth by the Finance Committee of Addenbrooke's Hospital, Cambridge. The 30th of May has been fixed as the Sunday on which collections are to be made on behalf of the institution in the different churches and chapels of the town.

ZYMOTIC DISEASES IN DUBLIN.—During the March quarter small-pox caused 61 deaths; measles 95; scarlatina 136; diphtheria 13; whooping-cough 106; fever 76; and diarrhœa 34.

VACCINATION GRANTS.—The following gentlemen have received Government grants for successful vaccination in their respective districts:—Dr. Cuolahan, of Bermondsey, £127 12s. (fourth award); Mr. W. Powell, of the Bromyard Union (second award); Mr. J. H. Hynes, of the No. 2 District, Nottingham Union, £55 14s. (second award).

ADMIRALTY APPOINTMENTS.—Staff-Surgeons T. C. Hickey to the *Resistance*, Septimus Evans to the *Impregnable* for service in the *Nautilus*, and Joseph Wood to the *Himalaya*; Surgeons William Tait to the *Impregnable* for service in the *Pilot*, J. Dunlop to the *Orwell*, and R. W. Williams to the Plymouth Division of the Royal Marines.

ABERDEEN DISPENSARY.—At the annual meeting of the friends of this charity it was announced that there had been, during the past year, an increase of 470 in the number of patients. The important part played by wholesome and nutritious food in the treatment of the sick poor was shown to be especially recognised by the medical officers in that they had recommended to the Society for the Improvement of the Condition of the Poor, eighty-two persons, of whom sixty had received food and clothing. Complaint was made—and justly—by the chairman of the meeting of the smallness of the amount of subscriptions in the past year—viz., £96—a sum certainly not creditable to the citizens of Aberdeen.

PHYSICAL BASIS OF LIFE.—On Monday evening, at a Meeting of the Victoria Institute, held at 7, Adelphi-terrace, a paper by Professor H. Alleyne Nicholson, M.D., D.Sc., F.R.S.E., who fills the chair of Natural History in the University of St. Andrews, was read, the subject being "Life and its Physical Basis." It discussed the physical and chemical properties of the substance known as protoplasm, which forms the common basis of all organic bodies; the phenomena exhibited by simple masses of protoplasm in a living condition (such as the monera, the amœba, and the yeast plant); the distinctions between dead protoplasm and living protoplasm; the nature of vitality; and the essential character of the temporary connexion which subsists between protoplasm and life. A communication bearing on the latest researches in this recondite branch of natural history, from Professor G. G. Stokes, F.R.S., of Cambridge, was also read, and a discussion followed.

BEQUESTS ETC. TO MEDICAL CHARITIES.—Mr. Thomas Wrigley, of Timberhurst, Bury, bequeathed £10,000 each to Owens College, the General Hospital for Sick Children at Pendlebury, the Royal Albert Asylum for Idiots and Imbeciles of the Northern Counties at Lancaster, and the Bury Dispensary. Mr. Duncan MacDermid, and Miss Margaret MacDermid, his sister, bequeathed £500 to the Royal Infirmary, £500 to the Western Infirmary, and £200 to the Convalescent Home, all at Glasgow, and £200 to the Institution for Imbeciles at Larbert. Sir Thomas Bernard Birch, Bart., of the Hazels, Prescot, bequeathed £300 to the Liverpool Infirmary, £200 to the Liverpool Dispensaries, £100 to the Liverpool Northern, and £100 to the Liverpool Royal Southern Hospital. Miss Mary Wasey, who recently died at Prior's Court, Chieveley, near Newbury, has bequeathed £3000 to the Royal Berkshire Hospital at Reading, £2000 to the Bath Hospital, £2000 to the Cancer Hospital at Brompton, and £2000 to the Consumption Hospital, Brompton.

Medical Appointments.

Intimations for this column must be sent DIRECT *to the Office of* THE LANCET *before 9 o'clock on Thursday Morning, at the latest.*

BOOTH, J. M., M.B., C.M., has been appointed Medical Officer to the Aberdeen Dispensary, vice Simpson, resigned.

BRANDER, J., M.B., C.M., has been reappointed Medical Officer to the Aberdeen Dispensary.

CLARK, J. G., M.R.C.S.E., L.S.A.L., has been appointed Clinical Assistant to the Medical Out-patient Department of the London Hospital.

ELLIOT, J., L.R.C.P.Ed., has been appointed Medical Officer to the First District and Workhouse of the Bellingham Union, vice Hill, resigned.

FOWLER, J. K., M.B., has been appointed Assistant-Physician to the Middlesex Hospital.

GANGE, F. A., M.D., has been appointed Medical Officer of Health to the Faversham Rural Sanitary Authority.

GARDEN, R. J., M.D., C.M., has been reappointed Medical Officer to the Aberdeen Dispensary.

GRAHAM, A., L.R.C.P. &c., has been appointed Medical Officer to the Western Division of the Bingham Union, Notts, and District Surgeon to the Midland Railway Company's Friendly Society, Nottingham and Melton Line.

HALL, J. G., M.B., C.M., has been reappointed Medical Officer to the Aberdeen Dispensary.

HOLDEN, J. C., M.D., L.R.C.P.Ed., has been appointed Physician to St. Leonard's Hospital, Sudbury.

HOLDERNESS, W. B., has been appointed Surgeon to the Royal Infirmary, Windsor, vice Fairbank, deceased.

JONES, R. T., L.F.P.S.G., L.S.A.L., has been appointed Medical Officer to the Llanfihangel-y-Traethau District of the Festiniog Union.

KNIGHT, J. T., M.R.C.S.E., L.S.A.L., has been appointed Medical Officer to the Carlton District of the Basford Union.

LILLEY, G. H., M.D., has been appointed Assistant-Surgeon to Her Majesty's Convict Prison, Parkhurst, Isle of Wight.

LYNCH, J. C., M.R.C.S.E., L.S.A.L., has been reappointed Surgeon to St. Leonard's Hospital, Sudbury.

MACLURE, H., M.D., has been appointed Medical Officer to the First District of the Romford Union, vice Wright, resigned.

MURRAY, J., M.A., M.B., has been appointed a Surgeon to the Northern Infirmary, Inverness.

OGSTON, F., M.D., L.R.C.S.Ed., has been reappointed Medical Officer to the Aberdeen Dispensary.

PICKFORD, J. K., M.R.C.S.E., L.R.C.P.L., has been appointed Medical Officer to the Workhouse of the Leeds Union, vice Rhodes, resigned.

PURNELL, T., M.D., L.R.C.P.Ed., M.R.C.S.E., has been reappointed Medical Officer of Health for Wells Urban Sanitary District.

ROBERTSON, R., M.D., has been appointed Physician to the Liverpool Workhouse and Fever Hospital, vice R. Gee, M.D., appointed Consulting Physician.

ROWLANDS, J. F., M.R.C.S.E., has been appointed Medical Officer of Health for Richmond, Surrey.

SHAW, W., M.B., C.M., M.R.C.S.E., has been appointed House-Physician to the North Staffordshire Infirmary, vice McAldowie, resigned.

SHIELD, J., L.R.C.P.Ed., L.R.C.S.Ed., has been appointed Medical Officer to the Fourth District of the Romford Union.

SMITH, P. R., M.D., C.M., has been reappointed Medical Officer to the Aberdeen Dispensary.

TAYLOR, H. G., M.B., M.R.C.S.E., &c., has been appointed Assistant Medical Officer to the Royal Albert Asylum for Idiots and Imbeciles of the Northern Counties, vice D. T. Pinyfair, M.B., resigned.

TERRY, C., M.R.C.S.E., L.S.A.L., has been reappointed Medical Officer to the Third District and the Workhouse of the Newport-Pagnell Union.

TREW, E. P., M.B., C.M., has been appointed Medical Officer of the Lesbury District of the Alnwick Union.

THOMSON, W. A., F.R.C.S., has been appointed Surgeon to the Midland Railway Company, for the Ampthill, Flitwick, and Harlington Districts.

WILLIAMSON, W. H., M.B., C.M., D.D.S., has been appointed Dental Surgeon to the Aberdeen Dispensary.

Births, Marriages, and Deaths.

BIRTHS.

DUNLOP.—On the 20th ult., at 50, David-place, St. Helier's, Jersey, the wife of Andrew Dunlop, M.D., of a son.

GOULD.—On the 4th inst., at 16, Queen Anne-street, Cavendish-square, the wife of Alfred Pearce Gould, M.Ch., of a daughter.

KAVANAGH.—On the 3rd inst., the wife of P. Kavanagh, M.D., of Wickham-road, of a daughter.

LEESON.—On the 6th inst., at Copthall, Twickenham, Margaret, wife of J. Rudd Leeson, M.B., of a daughter.

SYMES.—On the 1st inst., at Ward's End, Halifax, the wife of Edmond West Symes, M.D., of a son.

MARRIAGES.

BRASH—GREGORY.—On the 6th inst., at St. Mary's, Tedburn, by the Rev. Charles Tothill, Rector, Edward A. Brash, M.R.C.S.E., L.R.C.P.L., only surviving son of the late James Brash, Esq., late 32nd Regiment, to Blanche, second daughter of J. B. Gregory, Esq., of Colley House, Tedburn St. Mary.

CHAWNER—CLOWES.—On the 31st ult., at St. Barnabas, Kensington, by the Rev. Albert Clowes (uncle of the bride), Alfred Chawner, L.R.C.P.L. &c., of Ashover, Derbyshire (son of the late Rev. W. Chawner, Vicar of Crich, Derbyshire), to Emily S. L., eldest daughter of William Clowes, Esq., Chancery Registrar, 86, Holland-road, W.

CROCKER — FUSSELL.—On the 3rd inst., at St. Nicholas Church, Brighton, by the Rev. T. Lee, Vicar of St. John the Baptist, Islington (uncle of the bride), assisted by the Rev. F. Brealey, late Vicar of Easingwold, Henry Radcliffe Crocker, M.D. Lond., M.R.C.P., of 28, Welbeck-street, W., to Constance Mary, only child of Dr. Fussell, of Brighton, and granddaughter of the late Henry Austin Fussell, of Stirford House, South Wilts.

ELLIOT—BAINBRIDGE.—On the 6th inst., at St. Paul's Church, Whitley, by the Rev. John S. Nye, assisted by the Rev. F. Eales, Henry Elliot, M.R.C.S.E., of Marden, Kent, to Annie, third daughter of the late William Bainbridge, Esq., Barrister-at-law, of Cliff House, Cullercoats, Northumberland.

HARRHY—ASHTON.—On February 28th, at Barkly Diamond Fields, Griqualand West, South Africa, William Rosser Harrhy, L.R.C.P., M.R.C.S.E., L.M., J.P., District Surgeon, to Sarah, youngest daughter of the Rev. William Ashton, Missionary of the London Missionary Society.

SWAIN—ARCHBELL.—On the 3rd inst., at St. Saviour's Church, Buxton, by the Rev. J. D. Hawksley, Edward Swain, L.R.C.P.Ed. &c., Medical Superintendent of the Three Counties Asylum, Arlesey, Beds, to Florence Annie, eldest daughter of the late James Archbell, of Regent's-park.

DEATHS.

ADAMS.—On the 30th ult., at Bardnam-street, Bungay, Edward B. Adams, M.R.C.S.E., L.S.A.L.

ROBATHAN.—On the 9th ult., after a lingering illness, at his residence, Main-street, Hyde-park, Pennsylvania, U.S., Dr. John W. Robathan, eldest son of Edward Robathan, L.R.C.P.Ed., M.R.C.S.E., of The Grove, Risca, Monmouthshire, aged 56.

WINSLOW.—On the 1st inst., after a few hours' illness, at Sussex House, Hammersmith, William St. John Forbes, fifth son of Dr. L. S. Forbes Winslow, aged 9 months.

N.B.—*A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

METEOROLOGICAL READINGS.

(Taken daily at 8 a.m. by Steward's Instruments.)

THE LANCET OFFICE, April 8th, 1880.

Date.	Barometer reduced to Sea Level, and 32° F.	Direction of Wind.	Dry Bulb	Wet Bulb	Solar Radia. in Vacuo	Max. Temp Shade	Min. Temp	Rain fall.	Remarks at 8.30 A.M.
April 2	29·38	S.W.	46	45	..	54	40	0·08	Raining
,, 3	29·58	W.	54	51	91	64	44	..	Cloudy
,, 4	29·25	S.W.	54	52	91	63	51	..	Cloudy
,, 5	29·40	S.W.	50	47	92	58	41	0·08	Cloudy
,, 6	29·28	N.W.	44	42	78	55	40	0·15	Overcast
,, 7	29·56	W.	41	40	84	58	37	0·06	Overcast
,, 8	29·68	N.	43	42	70	46	30	0·15	Overcast

Notes, Short Comments, and Answers to Correspondents.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Local papers containing reports or news-paragraphs should be marked.

Letters, whether intended for publication or private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

Lectures, original articles, and reports should be written on one side only of the paper.

We cannot prescribe, or recommend practitioners.

All communications relating to the editorial business of the journal must be addressed "To the Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *to be addressed "To the Publisher."*

POISONING BY INDIAN HEMP; AUTOPSY.

THE *Indian Medical Gazette* reports a case of death resulting from Indian hemp, some preparation of which the deceased had been accustomed to smoke for many years. After so indulging he generally became insensible or stupid. He was delirious for a fortnight before his death. On the day on which he died he tried to hammer a nail into his temple, and then expired suddenly. The post-mortem examination revealed the following condition:—Body of a well-nourished male, aged about forty years, exhibiting no marks of violence excepting a small lacerated wound, measuring a quarter of an inch across, over right temple. This did not penetrate the muscular aponeurosis. Beneath the occipito-frontalis, and at a point below the wound, there was a large clot of extravasated blood. Skull not fractured. On removing the vault, vessels of diploe and dura mater were seen to be greatly congested. Beneath the dura mater blood was found effused over the whole upper surface of right brain and over the frontal lobe of left brain. A large clot was found in the right middle fossa of skull; this extended across the crus and pons. There was a large clot in the left lateral ventricle; a smaller one in the right. The posterior borders of lower lobe of lungs on both sides were hypostatically congested, otherwise healthy. Cavities of the heart empty; valves competent, healthy. Liver, spleen, intestines, and kidneys healthy. Stomach full of half-digested food; mucous membrane blackened in places from decomposition of blood in distended vessels. Bladder full of healthy urine, but not distended.

Mr. T. Brenton.—The medical and surgical papers in "Cassell's Household Guide" would answer our correspondent's purpose. But all such publications are poor substitutes for good medical advice.

NEEDLES FOR ELECTRO-PUNCTURE.

To the Editor of THE LANCET.

SIR,—In your report of Dr. Ord's paper on a case of "Aneurism treated by Galvano-Puncture," read before the Medical Society of London, a difficulty appears to have arisen with regard to the insulation of the anodal needles. I send herewith a needle, insulated with shellac after a method I have adopted for some years past. As you will observe, the needle has been used (in an aneurism of the arch of the aorta), the point being eaten away, and the uninsulated portion much oxydised, yet the insulation remains perfect. The shellac is applied by heat, care being necessary to avoid a too high temperature, as, if the heat be excessive, the lac is covered with microscopic fissures which destroy its cohesion, and render the insulation imperfect. Needles thus insulated may be obtained from Messrs. Mottershead and Co.

Yours, &c.

Manchester, March 22nd, 1880. J. DIXON MANN.

BROWN INSTITUTION.

IT appears from a Report to the Committee of the Brown Institution for the year 1879, by the Professor-Superintendent, that during the first part of the year the amount of material for clinical and pathological investigation afforded directly by the practice of the Institution was necessarily small, and even since that time comparatively few cases have presented themselves having any special interest. "Of these," Dr. Greenfield observes, "I may especially mention several cases of nervous diseases in domestic animals to which my own attention has been directed. Together with these, many carcases of animals have been sent from all parts of the country for pathological investigation, and have afforded material for study. I have reason to believe that great good is done by this part of the work of the Institution. In many cases the nature of an outbreak of epidemic disease is thus determined with certainty at the outset, and the proper measures can be taken to arrest its progress; and in other cases opportunities are afforded for the pathological investigation of diseases which are rare in towns, or which are obscure in their nature. On these grounds I believe that an extension of this branch of the work would be highly beneficial to the public in general. Apart from these subjects, which more particularly belong to the business of the Institution, I have, with the sanction of the Committee, been much engaged in an inquiry, on behalf of the Royal Agricultural Society, into the nature, causes, and prevention of anthrax and anthracoid diseases. This inquiry is in continuation of those which were so happily initiated by Dr. Burdon Sanderson in 1876, some of which have already yielded such valuable results with regard to pleuro-pneumonia and foot-and-mouth disease. The present inquiry relates to the great class of diseases known as anthracoid, which are not only widely prevalent amongst bovine animals, and more rarely horses, in this country, but affect also sheep, deer, and sometimes man, in many parts of the globe. The forms most common in this country are known as splenic apoplexy and quarter evil respectively; and one very important question is whether these are diverse manifestations of one and the same disease, or in what way they are related. This problem I have endeavoured to solve by the microscopic examination of specimens from a number of cases of these diseases, and of other anthracoid diseases occurring in India and South Africa, by the artificial cultivation of the virus of the disease, and by the inoculation of lower animals (rodents) with the virus. So far as these observations have gone, they appear to show that these various diseases, though allied in the conditions of their occurrence, and in the organism which forms their specific virus, are yet not identical in either of those respects. Moreover, with regard to the forms which differ from splenic apoplexy, I have been able to show that these diseases are communicable by inoculation to rodents, and preserve in them the usual features of the special form of disease from which they were derived; thus rendering it highly probable that these forms are communicable by contagion, and are not merely due to local or climatic causes, as has been supposed. Beyond this, nothing special has been elicited as to the causes of anthrax. The other branch of the inquiry is even more important—viz., the possibility of prevention of the disease (splenic apoplexy) by inoculation of the virus transmitted through rodents. These experiments were suggested by the results of certain preliminary experiments made by Mr. Dugnid at the request of my predecessor, which appeared to show, first, that when anthrax is communicated by inoculation to bovine animals through rodents, the animals so infected, although exhibiting severe symptoms, recover; and, secondly, that such animals are less liable than others to future infection by the same process. I have continued experiments in the same direction, varying the method employed, with results which are in the main in striking confirmation of those which preceded. Hitherto I have been unable to perform the crucial experiment of exposure to direct contagion from a bovine animal suffering from the disease arising in the usual manner; but I have inoculated an animal thus protected with a large quantity of blood of a sheep which had died of anthrax, without producing any serious symptoms. Should this method of inoculation be found to succeed, even in a majority of cases, it would afford a most valuable prophylactic measure in those districts where from time to time whole herds of cattle die of the disease. It may, however, furnish another illustration of the pathological law exemplified in the relations of small-pox and vaccinia, and may serve as a basis for future more extended researches in relation to the prevention of fatal epidemic diseases."

HYPODERMIC INJECTION OF QUININE.

DR. MACREDDIE, civil surgeon of Pertabgurh, in Oudh, states the hypodermic administration of quinine to be both efficacious and economical. He employs citric acid, however, as a solvent, in the proportion of five grains to one grain of sulphate of quinia, in a drachm of water. Dr. MacReddie has never met with abscess or ulcer as resulting from the solution. The irritation sometimes arising disappears without treatment.

EXAMINATIONS AT THE ROYAL COLLEGE OF SURGEONS.

AS the mode of conducting the Primary or Anatomical and Physiological Examinations for the diploma of Membership of this institution has been much altered, perhaps the following may be interesting to teachers and students. Commencing with the written portion of the examination, there were two distinct papers submitted to the candidates on the same day (viz., the 2nd instant), from one to three o'clock, when they were required to answer four, and not more than that number, out of the following six questions on Anatomy:—

1. Describe the calcaneum.
2. Describe the arrangement and attachments of the perineal fascia.
3. Give the attachments of the trapezius muscle; state what structures are exposed upon its removal.
4. Give the dissection required to expose the first portion of the subclavian artery on the right side.
5. Describe the course and relations of the portal vein; name its tributaries, and mention their anastomoses with the systemic veins.
6. The brain being removed from the skull, how would you proceed to expose the corpora quadrigemina?

These having been answered or attempted, they met again after an hour's respite—viz., from four to six, when the following questions on Physiology were submitted to them, with the same conditions as the Anatomical:—

1. Give the physical characters and chemical composition of the blood; describe its corpuscles. What purposes do they fulfil?
2. Mention the average period of eruption of the temporary and permanent teeth. Describe the minute structure of a tooth.
3. Give a description of the microscopical appearances presented by a transverse section of the spinal cord in the cervical region. What are the functions of the cord?
4. Describe the course and minute structure of a renal tubule. What functions have been ascribed to its several parts?
5. How is the circulation of the blood maintained? What is the average velocity of the blood in the larger arteries and veins, and in the capillaries? By what means has this been ascertained?
6. What is the structure of adipose tissue? What are its uses in the economy? and what are the circumstances that lead to variations in its amount?

Of the 173 candidates, 24 were examined daily at the *viva voce* for fifteen minutes at *two* tables, instead of ten minutes at *three*, as heretofore. At these tables there were two examiners in Anatomy and two in Physiology. At the former tables were to be seen carefully-prepared dissections, made by gentlemen who had passed the examination, and the *élite* of the metropolitan schools, as also some beautiful preparations from the museum of the College. At the expiration of the time the candidate proceeded to the Physiological tables, where he was met by two examiners, who submitted to him microscopic objects, such as blood, urine, milk, muscular fibre, bone, enamel, sections of kidney, brain, &c. The examiners in Anatomy were Messrs. Durham and Bellamy at table A, and Messrs. Pick and Rivington at table B; Physiology was represented at table C by Messrs. Power and Lowne; and at D by Messrs. Baker and M'Carthy. The new plan appears to work very well, and to give great satisfaction to the students. Mr. Heath, who is the Chairman of the Board, readily admits Fellows of the College and teachers generally to witness the examinations, which in consequence may be considered public.

A FEW REMARKS ON AN EPIDEMIC OF RUBEOLA.

To the Editor of THE LANCET.

SIR,—I have read with interest Dr. Dyce Duckworth's account of a case of rubeola in your issue of March 13th, as we are passing through an epidemic of this disorder, which first made its appearance amongst us some four months ago. I have had under my care many cases, male and female, their ages varying from sixteen to forty-five years. The case of A. M——, described by Dr. Duckworth, is typical of the generality of my cases. The most striking features of this disorder that I have noticed are—(1) the uncertain manner in which it seems to affect those exposed to the infection, one or two of a large household suffering from it, the others escaping, notwithstanding the absence of all precautionary measures; (2) the incubative period is about fourteen days, the prodromic from one to three; (3) there is little or no discomfort during the existence of the rash, but that intense pruritus often ensues upon its dying away; (4) there is little or no desquamation; (5) the enlargement of the cervical and suboccipital glands, with their excessive tenderness, is often the first condition that indicates that a person is out of sorts; (6) this lymphatic irritation is out of all proportion to the amount of pharyngeal congestion or other local causes. I might remark that we have had concurrently with this outbreak of rubeola an epidemic of true measles. From this and the fact that nearly all my patients suffering from the former can give a definite account of having had measles, however heretical it may seem, one is led to wonder whether this so-called rötheln is not morbilli, modified by a previous attack. My treatment has been warm baths with saline aperients. All my cases have terminated satisfactorily.

I remain, Sir, yours &c.,

Kingsbridge, April 2nd, 1880. W. H. WEBB, M.R.C.S.

Mr. J. Robertson.—The matriculation examination at the Royal Veterinary College, London, is as follows:—A pupil, previously to his admission, is required to produce a recognised certificate of educational requirements, bearing date within the past four years. This certificate must include all the pass subjects of the matriculation examination, or otherwise he must pass an examination in writing, reading aloud, dictation, English Grammar, English History, Arithmetic, and French or Latin. A pupil may elect to be examined in any of the following subjects:—Euclid, Algebra to Quadratic Equations, Geography, Natural History, Physiology, Chemistry, Physics, and the Greek, German, or Italian Languages. The usual age for entering a veterinary school is eighteen years. There are two schools in Edinburgh, one in Glasgow, and one in London. All are affiliated to the Royal College of Veterinary Surgeons, the licensing body.

Mr. E. Winterborne.—In such a case the disease must, without doubt, be regarded as inherited. Epilepsy, which is in part the result of inherited taint, may commence at any period of life, as Dr. Gowers has shown in the lectures now publishing in our columns.

Dr. W. R. Smith, (Cheltenham.)—The paper will appear in an early number.

IS JAGGARY AN ANTISCORBUTIC?

To the Editor of THE LANCET.

SIR,—Surgeon Cullimore, in your impression of March 27th, exhibits surprise at the inferences I drew from his letter of January 31st, "On the Remedial and Preventive Effects of Molasses in Scurvy," &c. Here is the sentence which led me to believe that he had adopted the theory that sea influences and salt provisions are *per se* causative of scurvy: "Thus impressed by memory, and being surrounded by disease of a scorbutic character, though brought about by causes far removed from sea influences and salt provisions (these latter cannot be set down as causes of scurvy in the Indian famine, as the very bullocks often died from *want of it* ["sea influences and salt provisions," or "disease of a scorbutic character"?] owing to the heavy salt tax; it was due more to starvation, and to the effects of roots, nuts, wild aloe, prickly pear, and such inedible matters)." From the foregoing I concluded Surgeon Cullimore implied that (1) sea influences and salt provisions are the usual causes of scurvy; (2) that at sea the excessive use of salt is the prime cause; but that (3) in the Madras famine scurvy was due more to starvation, and to the effects of roots, nuts, wild aloe, and prickly pear. These conclusions may seem "illogical and incomprehensible," but they seem at least natural.

As to the bullocks exhibiting strong political feelings, and dying as a result of the "heavy salt tax," the question is hardly one to engage your space with; but I must say that Surgeon Cullimore's experience must have been cast in happy places to have discovered that, even in the most prosperous times, the average ryot gives to his bullocks one atom of salt from one year's end to another.

I am sorry I was not sufficiently logical to comprehend that your correspondent's experiments were intended to prove the "assimilation-assisting" power of jaggary, and confess I somewhat lost myself in following his statements as to the "powerful calorifacient, antiscorbutic, and assimilation-assisting properties of jaggary"—*multum in parvo!* But now that I do know that his experiments were advanced in proof of the latter quality only, I must still be allowed to point out that even on this count they cannot be considered to carry conviction. A gaol surgeon of the most slender experience usually knows that for a short time after admission prisoners fall off in weight; hence the comparison between twelve men received into a famine camp and twelve lately arrived inmates of a gaol is fallacious, and hence also Surgeon Cullimore's observations may be regarded as "practically worthless."

To bring into greater relief the alleged assimilation-assisting properties of jaggary, your correspondent states "it was the general experience that the chronically starved lost weight for at least a week after admission" into famine camps, "*no matter how well fed*, unless sugar was given." Well, Sir, this may be that gentleman's experience stated again in a "general way," but, after a careful series of weighings undertaken with reference to gain of weight on certain diets in periods of time, this certainly was not mine; that is to say, provided that patients were selected and placed upon diet considered suitable for their individual requirements, so as to obviate as far as possible the risk of intestinal complications. In the case of prisoners, there exist well-recognised reasons why they may be expected to fall off in weight for a short time; but with the famine-stricken, the change from a wandering life of beggary, bereft of food and shelter, to one of comparative ease and luxurious feeding, should surely be followed by progressive increase of weight. Can your correspondent state why his patients were so "illogical and incomprehensible" as to obstinately refuse not only to be benefited by food under favourable circumstances, but actually to *fall off in weight* for a whole week? In the meantime, it is not, I think, "beyond the bounds of imagination" that "a sane person" should believe that these experiments, as formerly suggested by me, simply demonstrate a fact known to the cattle-breeder in this and in other countries, that when saccharine bodies are added to an otherwise full diet increase of weight will be obtained.

As to the alleged antiscorbutic properties of molasses, Surg. Cullimore would fain regard the evidence of the New England sea-captains and that of Dr. Buzzard as conclusive. That of the latter would certainly be entitled to the greatest respect, if capable of the interpretation your correspondent would desire; but I question if Dr. Buzzard would care to have his testimony coupled with that of even "practical men," who declare that molasses is *more efficacious* than lime-juice. As a useful addition to the diet of imperfectly-fed soldiers, no doubt it was employed with "decided benefit"; but I see nothing in Dr. Buzzard's communication that could be regarded as incompatible with the belief that its action was otherwise than due to an increase in the total nutritive power of the diet produced by such an addition, and thus effected a modifying influence in cases of scurvy. Indeed, Dr. Buzzard's testimony would go strongly against employing it in the case of the famine-stricken (the position assumed by Surgeon Cullimore), as he distinctly points out that intestinal affections were apt to arise as a result of its use; so that it is evident, even if he believed in molasses as an antiscorbutic, he would not agree with your correspondent as to its "assimilation-assisting property," or that either result would be effected by a "partial acetous fermentation."

Surgeon Cullimore evidently considers that in asking me if I have used jaggary he puts a crucial question, which, if not answered in the affirmative, I should be bound for ever to hold my peace on the ground that my criticisms are "practically worthless." Well, Sir, if this notion is tenable, the sooner you desert your desk the better, for I am much afraid that you have driven THE LANCET before now through many a pretty theory without having seen the practice advocated in its support carried out. Might not your correspondent have concluded that in my experience as a famine-wallah, I must have seen something of a remedy that by his recommendation was introduced "generally among the famine-stricken people of the Madras Presidency?" But, Sir, I did not use it, nor did I see it used. I was, however, aware of Surgeon Cullimore's advocacy of jaggary, and, now I am making a confession, let me add, nothing came to my knowledge to lead me to consider it necessary to abandon established antiscorbutics in favour of what I considered, and consider, would in a famine-stricken subject give rise to intestinal affections. Surgeon Cullimore may, perhaps, be able to show statistics on this latter point. A remarkable absence of diarrhœa and dysentery in camps where jaggary was used as contrasted with others, would be of decidedly more value in proving its assimilation-assisting properties than the two bald and fallacious experiments he has advanced.

Your obedient servant,

April, 1880. A MADRAS FAMINE-WALLAH.

HICCOUGH.

DR. J. S. WARREN, of Danville, Ky., offers, as an explanation of the relief afforded to hiccough by holding the breath as long as possible, the following theory: "By holding the breath the trisplanchnic nerve is held in abeyance until the pneumogastric, which is off guard, can get back to its post."

Mr. G. S. Davies.—Messrs. Williams and Norgate would probably be able to supply the published monographs on the subject; but, as much of the "literature of septicæmia" is to be found only in journals and in Transactions of Societies, some library—e.g., that of the Royal College of Surgeons—should be consulted.

E. C. G.—Small books of Questions have been published by Gant, Lush, Husband, &c.

J. H. B.—Safranine, one of the red aniline dyes, has been recommended for the detection of amyloid matter.

Dr. John Anderson.—Henle's Anatomy is the best. We know nothing of the Surgery or Medical Dictionary.

Inquirer.—The Habitual Drunkards Act.

CASE OF OBSTINATE SCIATICA RELIEVED BY STRETCHING OF NERVES.

To the Editor of THE LANCET.

SIR,—The following case, which was under the care of Dr. Robertson may be of interest:—

D. F——, a blacksmith, aged forty-five, had for eight months suffered from sciatica of such severity as to entirely unfit him for work during that period. The paroxysms of pain were very frequent and intense, and his general health had been much impaired. No improvement following the exhibition of ordinary remedies, he became an inmate of the Glasgow Western Infirmary, where he remained for ten weeks. During his stay in the hospital he had blisters applied repeatedly over the course of the nerve without benefit; and the paroxysmal pains being still undiminished as to their frequency and violence, the actual cautery was resorted to, but failed to lessen his suffering. The daily use of galvanism for three weeks afforded not even temporary immunity from pain, and he quitted the hospital in no sense relieved, having refused to undergo the operation of stretching. Two weeks after his return home he consented to the operation being performed. Accordingly, having been brought under the influence of chloroform, an incision, two and a half inches in length, was made midway between the major trochanter and ischial tuberosity; the nerve was easily exposed and hooked out by the fingers. It was then firmly stretched until a degree of relaxation was obtained, extension of the limb being at the same time maintained. The wound was brought together with wire sutures, and antiseptic dressing applied. A good deal of suppuration followed, due, doubtless, to the comparatively low vitality of the tissues involved. Since the operation, twenty-two days ago, he has had no return of the paroxysms, and complains of no pain other than that referable to the wound.

Yours &c.,

Dumbarton, March 22nd, 1880. MAULE RICHARD, L.F.P.S.G.

SPECIALISM.

THE New York *Medical Gazette* takes note of the increase of specialism in the States, and while acknowledging that there is some good purpose served in medical practice by a limited exercise of the principle of division of labour, objects, as we have often done, to its excessive development, as calculated to narrow the range of perception in diagnosis, and consequently to injure medicine as a healing art.

Mr. T. Beasley Green.—There is no rule to guide in such a question. The time occupied is an important element to be considered, of which our correspondent says nothing. He is himself the best judge. But he must not underrate the importance of such duties.

VOTING PAPERS FOR UNIVERSITIES.

To the Editor of THE LANCET.

SIR,—If your correspondent Mr. R. V. Ash, or any other gentleman qualified to vote, will communicate with the Secretary of either of the Committees in London, he will, no doubt, be enabled to get his voting-paper duly signed by a J.P. Mr. Hedderwick, 2, Fairfield-court, Temple, has, I know, made such arrangements in behalf of the Liberal interest. The voter can have his paper signed by taking with him some one known to the magistrate. Respectfully yours,

April, 1880. J. C.

COMMUNICATIONS, LETTERS, &c., have been received from—Dr. Vines, London; Dr. G. Johnson, London; Dr. Greenfield, London; Mr. Dewar, London; Mr. Morrant Baker, London; Dr. J. Cavafy, London; Mr. Robertson, Southport; Dr. W. Roberts, Manchester; Mr. Hordley, Hartshill; Dr. Tiffany, Kansas City; Mr. Robson, Leeds; Mr. Lowther, Hull; Mr. Wright, Manchester; Mr. Reeves; Mr. Green, Sedberg; Dr. Haddon, Eccles; Mr. F. M. Brown, Wansford; Mr. Webb, Ringsbridge; Mr. Grellett, Bancroft; Mr. Shaw; Dr. Chalmers, London; Mr. Winton, Abersychan; Mr. C. Stewart, London; Dr. Weaver; Dr. Aikman, Guernsey; M. Felix Danal; Mrs. Gamgee; Dr. S. Gale, Manchester; Dr. J. Anderson; Dr. Hewan, London; Mr. Naumann, Turbenthal; Dr. Bolleau, Southampton; Mr. Diggens, Lancaster; Mr. Triggs, Cape of Good Hope; Mr. Winterborne; Dr. Thomson, Algiers; Mr. Cody, Bombay; Dr. Mapother, Dublin; Dr. H. V. Carter; Dr. G. Buchanan, Glasgow; Messrs. Young and Postans; Mr. Marsh, London; Dr. Murphy, Sunderland; Mr. Battye, London; Mr. Scott, Manchester; M. Leichtersehofen, Homburg; Mr. Jesse, Macclesfield; Miss Manley, Prestsigne; Mr. Brenton, Richmond; Mr. M'Donald, Manchester; Dr. Pernisch, Engadine, Switzerland; Dr. Williams, Mr. Coutts; Mr. Hoggan, Bayswater; Messrs. Faraday and Sons, London; Messrs. Lea and Nightingale, Liverpool; Mr. S. Jones, Kensington; Mr. Henderson, Walton; Mr. Spencer, Chartham; Mr. Bate, Huddersfield; Mr. Greenwood, Liverpool; Messrs. Hunter and Co., Aberdeen; Mr. Bainbridge, Collercoates; Dr. Crowther, Luddenden; Mr. Mitcheson, Heckmondwike; Mr. Elwin, Dover; Dr. Ritchie, Otley; Mr. Grace, St. Andrews; Mr. Townsend, Exeter; Mr. Grant, Birmingham; Dr. Dalgado, Sawant Waree; Messrs. Gale and Co., London; Inquirer, London; The Editor of the *Bazaar*; Anti-quack; The Secretary of the Society of Arts; A Madras Famine-Wallah; E. C. G.; F. W. D.; An Old Surgeon-Major; I. V. R. C., Bala Hissar; R. V.; Medicus; &c. &c.

LETTERS, *each with enclosure*, are also acknowledged from—Mr. Kemm, Corsham; Mr. Hogden, Hayworth; Dr. Fraser, Kilsyth; Mr. Harrby, South Africa; Mr. Dick, Heckmondwike; Messrs. Milner, Lancaster; Mr. Mosse, London; Mr. Riccard, South Molton; Mr. Wall, Wigan; Mr. Young, Chilton Polden; Mrs. Cotrell, Cliftonville; Mr. Scott, Manchester; Mr. Barnascone, Plymouth; Dr. Bateman, Norwich; Mr. Torris, Derby; Mr. Gotelee, Odiham; Dr. Page, Kendal; Mr. Ross, Alderney; Professor Gairdner, Glasgow; Mr. Smith, Bridgend; Mr. MacEwen, Hammersmith; Mr. Gormley, Afghanistan; Mr. Birks, Sheffield; Mr. Brush, Weymouth; Mr. Collett; Mr. Sayre, Clifton; Dr. Smith, Glenbrook; Transfer, Hulme; A. G. T.; R., Manchester; T. H., Leicester; Alpha, Cardiff; H. B. S.; Medicus, Norwich; D. E., Birmingham; X., Leicester; Vicar, Sudbury; R., Barrow-in-Furness; L. M.; Dr. F.; Medicus, Wallsend; M.D., Whitechapel; M. F., Radnor; H. F. E., Ruyton Eleven Towns; Nova; D. G. H.; Surgeon, Regent's-park; D. M.; E. H., High Wycombe; R., Manchester; X. Y. Z.; M.R.C.S., York; Medicus, Manchester; &c.

Insurance Record, Medical Temperance Journal, Church of England Temperance Journal, Music, Pharmaceutical Journal, Shield, Analyst, Dumfriesshire and Galloway Herald, New York Medical Gazette, Manchester Guardian, Bristol Mercury, Liverpool Daily Post, Freemason, Hertfordshire Mercury, Western Morning News, Bury and Norwich Post, L'Union Médicale, &c. &c., have been received.

TERMS OF SUBSCRIPTION TO THE LANCET.

POST FREE TO ANY PART OF THE UNITED KINGDOM.

One Year.....£1 12 6 | Six Months £0 16 3

TO CHINA AND INDIA ..... One Year, £1 16 10

TO THE COLONIES AND UNITED STATES.. Ditto, £1 14 8

Post Office Orders in payment should be addressed to JOHN CROFT, THE LANCET Office 423, Strand, London, and made payable to him at the Post Office, Charing-cross.

Medical Diary for the ensuing Week.

Monday, April 12.

ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS.—Operations, 10½ A.M. each day, and at the same hour.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—Operations, 1½ P.M. each day, and at the same hour.

METROPOLITAN FREE HOSPITAL.—Operations, 2 P.M.

ROYAL ORTHOPÆDIC HOSPITAL.—Operations, 2 P.M.

ST. MARK'S HOSPITAL.—Operations, 3 P.M.; on Tuesday, 9 A.M.

MEDICAL SOCIETY OF LONDON.—8½ P.M. Dr. Clement Godson will exhibit a specimen of Placenta Succenturia.—Dr. T. Harrington Tuke, "On the Lunacy Laws."

Tuesday, April 13.

GUY'S HOSPITAL.—Operations, 1½ P.M., and on Friday at the same hour.

WESTMINSTER HOSPITAL.—Operations, 2 P.M.

WEST LONDON HOSPITAL.—Operations, 3 P.M.

ROYAL INSTITUTION.—3 P.M. Professor Huxley, "On Dogs, and the Problems connected with them."

ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.—8 P.M. Rev. Lorimer Fison: "Notes on Fijian Burial Customs."—Mr. C. Staniland Wake: "Notes on the Polynesian Race."

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.—8 P.M. Ballot.—8½ P.M. Dr. Gilbart Smith and Mr. Walsham, "On a Case of extreme Pharyngeal Stenosis, the result of Syphilis."—Dr. E. C. Anderson, "On the partial Metabolism by the Liver of Leucin and Tyrosin into Urea."

Wednesday, April 14.

NATIONAL ORTHOPÆDIC HOSPITAL.—Operations, 10 A.M.

MIDDLESEX HOSPITAL.—Operations, 1 P.M.

ST. BARTHOLOMEW'S HOSPITAL.—Operations, 1½ P.M., and on Saturday at the same hour.

ST. THOMAS'S HOSPITAL.—Operations, 1½ P.M., and on Saturday at the same hour.

ST. MARY'S HOSPITAL.—Operations, 1½ P.M.

KING'S COLLEGE HOSPITAL.—Operations, 2 P.M., and on Saturday at 1 P.M.

LONDON HOSPITAL.—Operations, 2 P.M., and on Thursday and Saturday at the same hour.

GREAT NORTHERN HOSPITAL.—Operations, 2 P.M.

UNIVERSITY COLLEGE HOSPITAL.—Operations, 2 P.M., and on Saturday at the same hour.

SAMARITAN FREE HOSPITAL FOR WOMEN AND CHILDREN.—Operations, 2½ P.M.

ROYAL MICROSCOPICAL SOCIETY.—8 P.M. Dr. M. C. Cooke, "On the Genus Ravenelia."—Mr. G. Hoggan and Dr. F. E. Hoggan, "On the Development and Retrogression of Bloodvessels."—Mr. A. Grunow, "On some New Species of Nitzschia."—Mr. W. Webb, "On a New Finder."

Thursday, April 15.

ST. GEORGE'S HOSPITAL.—Operations, 1 P.M.

ST. BARTHOLOMEW'S HOSPITAL.—1½ P.M. Surgical Consultations.

CHARING-CROSS HOSPITAL.—Operations, 2 P.M.

CENTRAL LONDON OPHTHALMIC HOSPITAL.—Operations, 2 P.M., and on Friday at the same hour.

HOSPITAL FOR WOMEN, SOHO-SQUARE.—Operations, 2 P.M.

ROYAL INSTITUTION.—3 P.M. Professor Tyndall, "On Light as a Mode of Motion: Theories of Light and Colours."

HARVEIAN SOCIETY.—8½ P.M. Mr. Teevan: "Points in the Surgery of the Urinary Organs which every Practitioner ought to know."—Mr. Henry Power, "On the Affections of the Eye in connexion with Pregnancy."

Friday, April 16.

ST. GEORGE'S HOSPITAL.—Ophthalmic Operations, 1½ P.M.

ST. THOMAS'S HOSPITAL.—Ophthalmic Operations, 2 P.M.

ROYAL SOUTH LONDON OPHTHALMIC HOSPITAL.—Operations, 2 P.M.

ROYAL INSTITUTION.—8 P.M. Evening Meeting.—9 P.M. M. Ernest Renan, "On Marcus Aurelius."

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—7½ P.M. Mr. A. Wynter Blyth, "On the Prevention and Propagation of Diphtheria."—Dr. Alfred Hill, "On Diphtheria and Typhoid, and their Concomitant Conditions in Birmingham."

Saturday, April 17.

ROYAL FREE HOSPITAL.—Operations, 2 P.M.

ROYAL INSTITUTION.—3 P.M. Mr. James Sully, "On Art and Vision."

TERMS FOR ADVERTISING IN THE LANCET.

Seven Lines (seventy words) and under	£0	4	6
Every additional Line	0	0	6
(Each Line averages eleven words.)			
Front Page ..... per Line	0	1	0
Quarter Page	1	10	0
Half a Page	2	15	0
An entire Page	5	5	0
Advertisement Index ..... per Line	0	0	6

Terms for Serial Insertions may be obtained on application to the Publisher.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

N.B.—All letters relating to Subscriptions or Advertisements should be addressed to the Publisher.

NOTICE.—Advertisers are requested to observe that it is contrary to the Postal Regulations to receive at Post-offices letters addressed to initials only.

Agent for the Advertising Department in France—

M. BERTHIER, 104, Boulevard St. Germain, Paris.